ABSTRACT

Title of dissertation: CHILDREN'S DEVELOPING CONCEPTIONS OF FAIRNESS: THE ROLE OF STATUS IN CHILDREN'S RESPONSES TO INEQUALITIES

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The moral concern for fairness is a core element of social life throughout the lifespan. Concerns about fairness arise in multiple contexts, and one very salient context is the allocation of resources. This study investigated how 3- to 8-year-old children (N = 176) perceived of, and responded to, resource inequalities based on their status within the inequality (advantaged or disadvantaged) and whether the allocation was based on differences in individual merit or gender biases. Across a range of assessments, the present study documented how children's status within individual and gender based inequalities had a profound influence on how they perceived a context of resource inequality.

Results revealed that children who were disadvantaged by an inequality judged it to be more unfair than children who were advantaged by it. However, both advantaged and disadvantaged children judged gender based allocations to be more unfair than individually based inequalities. Children were also more likely to rectify a gender based

inequality than an individual one, whereas they were more likely to perpetuate an individual inequality than a gender based one.

Children's intra- and intergroup attitudes and inclusion decisions were also related to their status and the type of inequality that they experienced. Although children were more favorable towards gender ingroup than outgroup members, with age, children preferentially included gender outgroup peers that performed well at the activities.

Additionally, children who were personally disadvantaged by an inequality evaluated rectifying a separate, third-person, inequality more favorably and were also more likely to rectify the third-person inequality. Children with a more advanced understanding of others' mental states also judged rectifying gender based inequalities more positively and were more likely to include gender outgroup peers who performed well at the activities (controlling for age).

Overall, the results document the critical role of children's perspective within a context in their perceptions of, and responses to, the context. Results also have implications for fostering positive intergroup relationships, improving children's concern for rectifying first and third-person inequalities, and for our understanding of how children's position within a context relates to their ability to understand others' mental states

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by

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CHAPTER I: Study Rationale and Aims

The moral concern for fairness is a core element of social life throughout the lifespan. Concerns about fairness arise in multiple contexts, and one very salient context is the allocation of resources. Understanding the harmful consequences of unfair resource allocations, for example, is essential to ensuring social harmony and protecting the welfare of all individuals. Unfair allocations often result in social inequalities that disproportionately affect specific groups or individuals. When this situation arises, not only is there a violation of fairness in terms of distributions but there is also the consideration of overall social equality, that is, treating individuals equally regardless of their group membership or group identity. Recent research has demonstrated that, although children possess an understanding that resources ought to be allocated according to the moral principles of fairness, they also incorporate group concerns into their allocation decisions, such as group membership and group norms.

An emerging body of literature, drawing from behavioral economics, developmental psychology, social psychology, and philosophy, has examined how children come to understand the fair allocation of resources. These largely separate bodies of research have documented important age-related changes throughout the lifespan regarding how individuals think about these concerns. For example, children's understanding of equality, equity, and merit when allocating resources each undergo significant developmental changes between 3- and 8-years-old (Elenbaas, Rizzo, Cooley, & Killen, 2016; Rizzo, Elenbaas, Cooley, & Killen, 2016; Rizzo & Killen, 2016; Schmidt, Svetlova, Johe, & Tomasello, 2016). Further, children's concern for group membership and group norms increasingly influence their allocation and inclusion

decisions throughout childhood (Cooley & Killen, 2015; McGuire, Rutland, Rizzo, & Killen, 2017). Finally, children's ability to think and reason about others' mental states (others' beliefs, desires, and emotional wellbeing), as well as their understanding of personal ownership and property, undergo significant development throughout childhood (Friedman, Van de Vondervoort, Defeyter, & Neary, 2013; Nancekivell & Friedman, 2017; Wellman & Liu, 2004). Comparatively little research, however, has examined how children coordinate moral, group, and personal/psychological concerns when allocating resources, which is critical to understanding how they make allocation decisions in their daily lives.

The social reasoning developmental (SRD) model (Killen & Rutland, 2011; Rutland & Killen, 2015) provides a framework for addressing this gap by examining how children coordinate moral and group concerns in various social contexts. Thus, guided by the SRD model, the present study aims to examine how children coordinate moral, group, and personal concerns when making important resource allocation and inclusion decisions in familiar contexts.

Theoretical Foundations

The SRD model integrates foundational theories on children's social and social-cognitive development. Specifically, the SRD model builds on the three domains – moral, social-conventional, and personal/psychological – outlined by social domain theory (SDT) (Smetana, Jambon, & Ball, 2014; Turiel, 1983, 2002), and the accounts of children's developing understanding of group dynamics from social identity theory (SIT) (Tajfel & Turner, 1979) and developmental subjective group dynamics (DSGD) (Abrams & Rutland, 2008). According to the SRD model, throughout development, individuals

take an active role in reasoning about moral, group, and personal concerns when making social decisions. Further, researchers working from the SRD model argue that it is not only children's understanding of each of these concerns that develops, but also their ability to integrate and coordinate multiple, potentially conflicting, concerns when thinking and reasoning about their social world that undergoes significant development throughout childhood and adolescence. For example, although children's understanding of merit and equity undergo their own distinct patterns of development (e.g., understanding that increased effort does not always lead to increased production and understanding how historical inequalities impact present day individuals and groups), children's ability to coordinate between these concerns is also developing simultaneously (Rizzo & Killen, 2016; Rizzo et al., 2016). Thus, the SRD model provides an important theoretical framework for investigating how children navigate important social decisions, such as how to allocate resources and whom to include into a group (Killen, Rutland, Rizzo, & McGuire, 2017).

SRD and Group Dynamics. Further, the SRD model highlights the importance of investigating the various issues related to group identity (Killen & Rutland, 2011). Children belong to numerous social groups, ranging from broad categories of ethnicity/race, nationality, religion, and gender, to more narrow categories such as families, classrooms, clubs, and peer groups. Although affiliation with groups is an essential component of children's healthy social development, these various group identities can lead to intergroup conflict as children incorporate them into their self-concept and individual identity, particularly when demonstrating an ingroup bias reinforces children's position within their ingroup.

Children also become increasingly aware of the specific norms of their groups with age. For example, children recognize that group norms, once established, are binding, and that it is the responsibility of all members of the group to ensure that everyone acts in accordance with these norms (Schmidt, Rakoczy, Miezsch, & Tomasello, 2016). Children then use these group norms to guide their social behavior in numerous contexts, including inclusion decisions (Killen, Rutland, Abrams, Mulvey, & Hitti, 2013; Rizzo, Cooley, Elenbaas, & Killen, 2017) and when allocating resources (Cooley & Killen, 2015; McGuire, Rutland, Rizzo, & Killen, 2017). Importantly, with age, children coordinate the norms of their group with broader moral norms, which apply across groups, as they navigate social conflicts (Killen et al., 2013; Mulvey & Killen, 2015). Thus, the SRD model expands on past theoretical models investigating group dynamics by examining how children coordinate their developing concerns for group membership, identity, and norms, with their developing concern for moral norms of fairness, justice, and others' welfare.

SRD and Theory of Mind. Recent work from the SRD model has also begun to investigate the role of children's social-cognitive ability to interpret others' mental states (desires, beliefs, intentions, emotions) in their evaluations of morally relevant contexts (see Killen, Rutland, Rizzo, & McGuire, 2017). Children's theory of mind (ToM) capacities – their ability to recognize that others' have their own distinct desires, beliefs, and intentions – play a critical role in their understanding of social contexts. For example, children's ToM capacities have been found to develop in a bidirectional, reciprocal, relationship with their developing moral evaluations (Smetana et al., 2012). Children's understanding of others' intentions also plays an important role in their judgments and

reasoning about morally relevant scenarios (Killen, Mulvey, Richardson, Jampol, & Woodward, 2011; Li, Rizzo, Burkholder, & Killen, 2017; Nunez & Harris, 1998; Rizzo, Li, Burkholder, & Killen, 2017; Zelazo et al., 1996).

Furthermore, the SRD model builds upon previous work documenting the relationship between children's ToM capacities and their ability to *recognize* prejudicial attitudes in others (Brown & Bigler, 2004, 2005; McKown & Weinstein, 2003), by arguing that children's ToM capacities also influence children's *own behavior* and evaluations. Children with more advanced ToM capacities are more likely to support individuals who challenge stereotypic group norms regarding activities (Mulvey, Rizzo, & Killen, 2015), and are less likely to allocate resources in line with stereotypes, such as those about gender (Rizzo & Killen, 2017).

Thus, the SRD model argues that children's developing ToM capacities influence their social decision making and evaluations in three key ways: (1) ToM capacities enable children to recognize the intentional status of an action (whether a transgression was done intentionally or by accident), which influences their evaluations of the action, (2) ToM capacities enable children to recognize that individuals do not always conform to stereotypic expectations about their group, thus allowing them to recognize the heterogeneity of groups, and (3) ToM capacities enable children to have a better understanding of the beliefs, desires, and emotional wellbeing of others, which in turn enables them to better recognize the consequences of a potential transgression on others' welfare. Therefore, given the importance of group dynamics and theory of mind, the current project is designed to investigate how children's understanding of group dynamics and theory of mind knowledge bears on their resource allocation decisions.

SRD Methodologies. Research guided by the SRD model has used a diverse range of assessments to assess children's behavior, judgments, and reasoning in different contexts. Behavioral assessments, including asking children whom they would like to include into a group and how they would like to allocate resources amongst a set of recipients, provide an important insight into how children *act* in certain contexts, and indicates the particular concerns that children and adolescence prioritize over others. Assessments of children's judgments, evaluations, and attributions in differing contexts allow for an analysis of children's understanding of multiple, simultaneous concerns within a given context. For example, when allocating resources to a poor or wealthy individual, young children report that it is okay to allocate resources equally *and* that it is okay to allocate resources equitably (Rizzo & Killen, 2016). These results suggest that, although young children may give priority to one concern over another in their allocations (e.g., by allocating resources equally between poor and wealthy individuals), they are still aware of multiple relevant concerns (e.g., by judging both equal and equitable allocations to be fair). Finally, reasoning assessments provide an open-ended opportunity for children to express the underlying reasons that motivated their judgments and behaviors. Thus, guided by the SRD perspective, the current project utilizes a combination of behavioral, judgment, and reasoning assessments in concert to garner a full understanding of how children navigate social conflicts.

The following sections will now examine research on children's developing conceptions of fairness regarding resource allocation and inclusion decisions. The sections are organized by the domains of concerns (moral, group, personal) and identify the critical gaps within the literature that the present study aims to address.

Conceptions of Fairness

Children's developing conceptions of fairness are a fundamental component of their social and moral development. Concerns for fairness center around how individuals ought to be treated relative to others - making fairness inherently social - as well as how individuals ought to be treated based on their individual effort, abilities, and performance (i.e., their merit). Research has typically examined children's developing conceptions of fairness in resource allocation *or* inclusion/exclusion contexts. Yet, no research to date has directly compared how children's inclusion decisions are related to their resource allocation decisions. In light of this gap, researchers working from the SRD model have argued for the importance of integrating children's conceptions of fairness regarding resource allocations and their conceptions of fairness when making inclusion decisions (Elenbaas & Killen, 2016; Killen, Elenbaas, Rizzo, & Rutland, 2016; Killen, Rutland, Rizzo, & McGuire, 2017). The following sub-sections will discuss and synthesize recent findings related to children's conceptions of fairness in both resource allocation and inclusion contexts.

Moral concerns. Extensive research from the SDT and SRD theoretical models has documented children's early emerging understanding of the moral principles for fairness, justice, rights, and ensuring others' welfare. Although traditional theories of moral development argued that children did not begin to understand the moral concern for fairness until later in childhood or adolescence (Damon, 1977; Kohlberg, 1969; Piaget, 1932), research has since documented that children begin to understand the moral concerns for fairness as young as 3-years-old (see Killen & Smetana, 2015 for a review). Further, more recent research has begun to break down the various concerns for fairness

in resource allocation and inclusion contexts to examine how children's understandings of the various fairness principles (e.g., equality, equity, merit, need, and inclusivity) develop.

In resource allocation contexts, children's understanding of equality emerges early, and the roots of equality understanding are even evident in infants' looking behavior (Schmidt & Sommerville, 2011; Sommerville, Schmidt, Yun, & Burns, 2013). Children also share resources equally amongst peers, particularly when the resources are gained collaboratively, (Melis, Altrichter, & Tomasello, 2013; Warneken, Lohse, Melis, & Tomasello, 2011), and judge equal allocations to be fair (Cooley & Killen, 2015; Rizzo & Killen, 2016; Schmidt et al., 2016). With age, however, children come to recognize that a strictly equal allocation may not always be fair. In contexts with preexisting inequalities between recipients (e.g., a poor recipient and a wealthy recipient), for example, children begin to allocate resources *unequally* – giving more to the previously disadvantaged recipient – to rectify the inequality. Additionally, by 6-years-old, children allocate resources meritoriously, giving more resources to individuals who worked hard than to those who were lazy (even when an equal allocation was possible), demonstrating a prioritization of merit over strict equality. Importantly, however, children's underlying concerns for equity and merit emerge well before 5- to 6-years-old. Three- to 4-year-old children judge equitable and meritorious allocations to be fair, and allocate resources in line with these concerns when an equal allocation is not possible (Baumard, Mascaro, & Chevallier, 2011; Li, Spitzer, & Olson, 2014; Paulus, 2014).

Research on children's developing inclusion and exclusion decisions also indicates children's understanding of fairness, equality, and inclusion as important moral

principles. When asked explicitly about whether it is fair to exclude someone who does not fit a stereotype (e.g., not letting a girl play with trucks), beginning by 3- to 5- years-old, children report that exclusion is unfair, and give moral reasons to justify their judgments (e.g., "The girl will feel bad", "It's not fair to not let her play just because she's a girl") (Theimer, Killen, & Stangor, 2001). Further, by 9- to 10-years-old, children report that they would support a peer who wanted to deviate from gender stereotypes, and expected their peers to share in this support (Mulvey & Killen, 2015). Thus, in both resource allocation and inclusion contexts, children demonstrate an emerging concern for fairness as a moral principle.

Group concerns. Researchers have also documented how children incorporate group concerns into their social decision making, including whom to include or exclude from a group and how resources should be allocated between individuals and groups. Young children self-segregate into gender groups (Mehta & Strough, 2009) and selectively include gender ingroup members in limited inclusion scenarios (Theimer, Killen, & Stangor, 2001; Mulvey & Killen, 2015). Further, young children preferentially allocate more resources to their gender ingroup than outgroup members (Dunham, Baron, & Carey, 2011; Renno & Shutts, 2015), and are more likely to rectify inequalities that disadvantage members of their ethnic/racial ingroup than outgroup (Elenbaas et al., 2016; Olson, Dweck, Spelke, & Banaji, 2011). These findings suggest that the concern for group membership plays an important role in children's social decision making.

Although it is important to note that children also reject explicit group based exclusion (Theimer, Killen, & Stangor, 2001; Killen et al., 2013), and that the developing awareness of the historical context between groups helps children to rectify longstanding

societal inequalities between groups (Elenbaas & Killen, 2016), it is clear that children's incorporation of group concerns can lead to harmful consequences in many intergroup contexts. Thus, understanding both (1) how children weigh group and moral concerns when making social decisions and (2) how awareness of the wrongfulness of group biases, discrimination, and prejudice can lead children to reject unfair allocations and inclusion decisions is critical to addressing many of the conflicts that arise in early childhood. The present study aims to address this gap by experimentally examining children's intra- and intergroup attitudes, as well as their inclusion decisions, in various resource allocation contexts.

Gender as a particularly salient social category. Although research has documented children's use of numerous group memberships when making allocation and inclusion decisions, the saliency of group membership is especially pronounced in young children's use of gender group membership. An extensive body of research has documented that children view gender as a salient social category from early in childhood (Bigler & Liben, 2006; Levy & Killen, 2008; Ruble, Martin, & Berenbaum, 2006). Toddlers as young as 2-years-old demonstrate an awareness of gender norms, and are surprised by counter-stereotypic behavior (e.g., a female shaving her face, or a male vacuuming the house) (Serbin, Poulin-Dubois, & Eichstedt, 2002).

Further, both adults and children themselves often reinforce gender as a salient social category; parents and teachers provide different toys and assign different chores on the basis of gender (Lytton & Romney, 1991), and peers self-segregate into gender groups early in development (Mehta & Strough, 2009). By adolescence, while children recognize that differential treatment of others based on their gender is unfair, in forced-

choice inclusion scenarios, children and adolescence preferentially include gender ingroup members, and justify their inclusion decisions by referring to stereotypes about abilities and preferences (Mulvey & Killen, 2015). Thus, the current project used gender as an intergroup context to examine children's resource allocation decisions and inclusion decisions throughout early and middle childhood.

Personal/Psychological concerns. Research has also begun to document the various ways in which children's concern for their own desires influences their social decisions, with particular attention being paid in regards to children's resource allocation decisions. Research dating back to Piaget (1932) has suggested that children's own desire for resources influences the degree to which they are willing to share with others (Almas et al., 2010; Blake et al., 2015; Damon, 1977; Fehr, Bernhard, & Rockenbach, 2008; Shaw, DeScioli, & Olson, 2012). And, although there are many contexts in which children share their resources equally, particularly those in which resources are gathered collaboratively (Cooley & Killen, 2015; Hamann, Warneken, Greenberg, & Tomasello, 2011; Warneken, Lohse, Melis, & Tomasello, 2011), there are also numerous contexts where children refuse to share their resources equally with others (Almas et al., 2010; Blake et al., 2015), suggesting that children's concern for personal property and ownership may be in play from early in development (Friedman et al., 2013; Nancekivell & Friedman, 2017). Investigating how children evaluate the allocations of resources that have a direct bearing on their own desires and welfare is critical to understanding how children perceive the resource allocation decisions that they themselves experience.

Developmental Mechanisms: Mental State Understanding

A growing body of research has begun to document how children's developing social-cognitive abilities relate to their social inclusion and resource allocation decisions. Children's theory of mind (ToM) competencies, in particular, have been linked to their moral development in many ways, and have been identified as a potential developmental mechanism for children's social and moral development (Brown & Bigler, 2004, 2005; Killen et al., 2011; Smetana et al., 2012; Sodian et al., 2016). For example, children's ToM competence has been found to relate to their willingness to challenge group decisions in stereotypic contexts (Mulvey, Rizzo, & Killen, 2015), awareness of intergroup prejudice and discrimination (Brown & Bigler, 2004, 2005; McKown & Weinstein, 2003), and evaluations of resource allocations that disproportionately harm outgroup members (Mulvey, Buchheister, & McGrath, 2016).

More specifically, recent research has demonstrated how children's ToM capacities both constrain and enable children's ability to make informed decisions in social and moral contexts. For example, Rizzo and Killen (2017) examined how children's ToM competence related to their perceptions of merit in stereotype consistent and inconsistent contexts. Results revealed that, although most children held stereotypic expectations regarding their peers' abilities, their ToM competence – assessed via a scale of multiple ToM assessments – was related to their ability to challenge these stereotypes when confronted with evidence that disconfirmed their stereotypes. These findings are also consistent with a previous study on how children's ToM capacities related to their willingness to support peers who do not want to conform to gender stereotypes regarding play activities (Mulvey, Rizzo, & Killen, 2015). Taken together, these findings

demonstrate the importance of investigating the role of children's ToM capacities in their ability to resist intergroup biases.

Although these experiments constitute important first steps to understanding how children's developing social-cognitive understanding of others' mental states can serve as a developmental mechanism for children's ability to resist harmful intergroup prejudices, biases, and discrimination, several critical questions remain regarding this process. For example, much of this research has been conducted using third-person vignettes; it remains unknown how children respond to instances of intergroup biases and discrimination when children themselves are embedded within the discriminatory context. Further, more research is needed to fully understand the complex interrelations between children's ToM capacities and their ability to challenge stereotypes across a range of contexts, stereotypes, and groups.

Present Study

Motivated by the gaps in the literature reviewed above, the present study was designed to examine how children coordinate moral, group, and personal concerns when evaluating resource allocations that they commonly experience in their daily lives, such as unequal allocations brought about by differing levels of merit (i.e. children being rewarded for their individual abilities and performance; e.g., grades, athletic group membership and competitions) and unequal allocations brought about by ingroup biases and prejudice (i.e. children receiving more than others due to their shared group membership; e.g., gender biases). The present study was also the first to directly investigate children's evaluations of these two contexts when they are either advantaged

(received more resources than their peers) or disadvantaged (received fewer resources than their peers) by an allocation of resources.

One way to investigate these questions is to create a task in which children, who are identified as part of a group, work on a project that requires effort and skill, and receive resources from an allocator based on either individual ability or group membership. This type of task enabled an assessment of whether children's perceptions of allocations based on group membership differ from their perceptions of allocations based on ability. Further, this design allows for an analysis of how children's evaluations of these different allocations differ based on whether they themselves are advantaged or disadvantaged by an unequal allocation. By investigating many different aspects of children's evaluations and perceptions, such as whether the allocation is fair, how they will feel, and whether the allocations should be changed, the present study allowed for an in depth analysis of children's developing conceptions of fairness.

Children's awareness of ingroup bias is often measured using third-person vignettes where children witness characters displaying an ingroup bias towards others (see Killen et al., 2013; Rutland & Killen, 2015 for reviews). Further, children's own ingroup biases have been assessed by asking children to allocate resources to individuals who differ only by their group memberships (Dunham, Baron, & Carey, 2011; Renno & Shutts, 2015). Research has examined children's ingroup biases based on gender, racial/ethnic, and minimal (experimentally determined) group memberships. For example, in a minimal groups paradigm, children are asked to divide up resources between a member of their own group (the blue shirts) or a member of an outgroup (the red shirts); in these contexts, children give more resources to an ingroup member than an

outgroup member, revealing an ingroup bias (Dunham, Baron, & Carey, 2011). In these situations, however, children are not in the recipient role (i.e. being the recipient of another individual's biased allocation or inclusion decision). Less is known regarding children's perceptions and evaluations of allocations based on ingroup biases when they themselves are the recipients. These types of analyses provide novel information regarding how children conceptualize different forms of unfairness or inequalities in resource allocation contexts.

Children who are disadvantaged by an allocation likely have a drastically different perception of the allocation from those who are advantaged by it. Further, while there are numerous different causes of these disputes, two in particular – inequalities resulting from individual efforts and inequalities resulting from group biases – have broad implications for children's conceptions of fairness. Thus, the present study aimed to examine how children perceive and evaluate allocation contexts that differ based on children's own status within the allocation (whether they are advantaged or disadvantaged by the allocation) and the underlying motivation behind the allocation (whether resources are allocated based on individual effort and ability or based on ingroup biases).

Aims of the Current Dissertation Project

The present study had four primary aims:

Aim 1: Investigate how children's status (Advantaged, Disadvantaged) relates to their perceptions of individual and group based inequalities. The present study extended past research on children's developing conceptions of fairness by examining how children's perceptions of unequal allocations of resources are influenced

by: (1) the Type of Inequality, whether it was based on an individual (e.g. abilities) or group membership (e.g., gender) factor, and (2) their status within the allocation (whether they receive *more* or *fewer* resources than their peers do). To date, the majority of research on children's moral development has examined participants' allocation of resource decisions in one of two conditions: when the participant is an allocator (you have these stickers; how do you want to divide them up between you and X?) or the participant is a witness (this child gives more stickers to person X than to person Y; is this okay?) (see Killen & Smetana, 2015 for a review). What is not known is how children evaluate allocation decisions in which they themselves are recipients who are either advantaged or disadvantaged by someone else's' allocation. Further, although separate lines of research have investigated children's allocations based on individual effort (e.g., merit) (Baumard, Mascaro, & Chevallier, 2011; Kanngiesser & Warneken, 2012; Rizzo et al., 2016; Schmidt et al., 2016) and group factors (e.g., gender group membership) (Theimer, Killen, & Stangor, 2001; Mulvey et al., 2014), no research to date has directly compared children's evaluations of resource allocation decisions in individual and group contexts. The benefit of this analysis is that it allows for an examination of how children perceive and evaluate two of the critical forms of unequal allocations that they experience in their daily lives.

Aim 2: Determine how children's intra- and intergroup attitudes are related to their status within individual and group based inequalities, with age. The second aim of the present study was to extend past research on children's intra- and intergroup attitudes. Intra-group attitudes refer to how individuals view their ingroup members, whereas intergroup attitudes refer to how individuals view their outgroup members.

Specifically, the present study examined children's attributions of abilities for the relevant task and favorability towards ingroup (intra-group) and outgroup (intergroup) members, embedded within a resource allocation context. Most research focuses exclusively on intergroup attitudes (do children include or exclude someone from another group?). Yet, there are many contexts in which children reject their own ingroup members when they do not conform to the norms of the group (Rutland & Killen, 2017). Little research has examined how children's evaluations of an ingroup member are influenced by their perceived abilities or competences. Research has documented that children exclude an ingroup member who deviates from group norms (Killen et al., 2013; Mulvey, Rizzo, & Killen, 2015; Rizzo, Cooley, Elenbaas, & Killen, 2017), yet it remains unknown how children respond to ingroup members who vary on their abilities, particularly in a competitive context (e.g., competing in a puzzle competition to receive a prize). The present study was the first to examine how children evaluate ingroup members based on their performance at a task, which allowed for an analysis of new information regarding how children weigh the concerns for group functioning and group membership when they conflict.

The present study was also the first to examine children's intra- and intergroup attitudes and inclusion decisions embedded within the context of an unequal resource allocation. Given the frequency of resource disputes in early childhood, understanding how these disputes influence children's intergroup attitudes is essential. While foundational research on intergroup attitudes argued that unequal status between groups can threaten intergroup harmony (Tajfel & Turner, 1979), and more recent research has documented the role of expected shared interests and abilities in intergroup relations

(Killen et al., 2013; Mulvey & Killen, 2015), the present study was the first to experimentally investigate how children's attributions of abilities, reported favorability, and inclusion decisions for both ingroup *and* outgroup peers are influenced by their advantaged or disadvantaged status within different resource allocation contexts.

Aim 3: Investigate how children's perceptions of third-person inequalities are related to their previous experiences with inequalities. The present study was also the first to examine how children's own experiences with inequalities relate to their responses to third-person inequalities. Past research has examined children's conceptions of fairness in experimental contexts designed to control for children's daily experiences. It is critical to know, however, how these daily experiences may shape children's perceptions of subsequent contexts. A child who had just been the victim of a resource dispute (e.g., received fewer resources than their peers) may be particularly sensitive to the concern for equity, whereas children who were just rewarded for a good performance may be especially sensitive to concerns for merit. To understand fully how children weigh and coordinate multiple concerns throughout development, it is critical to understand how their daily experiences shape their perceptions of subsequent peer contexts. Despite this importance, however, no study to date has examined how children's own experiences in resource allocation contexts influence their perceptions of third-person resource disputes.

Aim 4: Examine the bidirectional relationship between children's ToM capacities and their responses to inequalities. Finally, the present study investigated the relationships between children's developing ToM, their resource allocation decisions, and their inclusion decisions. Specifically, the present study expanded on past research

investigating how children's ToM capacities relate their evaluations of inequalities (Li et al., 2017; Mulvey, Buchheister, & McGrath, 2016; Takagishi, Kameshima, Schug, Koizumi, & Yamagishi, 2010), by examining how children's ToM capacities interact with their status within inequalities when children are evaluating the wrongfulness of the unequal resource allocation, and assessing the potential threats to others' welfare as a result of the allocation. Further, this study was the first to examine how children's ToM capacities are related to their intergroup attitudes and inclusion decisions in intergroup contexts.

Finally, the present study was also designed to provide novel insights into how children's perspective within a context relates to their ability to accurately identify others' mental states. A burgeoning body of research in social psychology has documented how adults' societal status – frequently defined in terms of SES – relates to their overall perspective taking ability, and the ability to identify others' emotional states (Kraus, Côté, & Keltner, 2010; Kraus et al., 2012). Specifically, Kraus, Côté, and Keltner (2010) found that adults from higher SES backgrounds performed worse on emotion attribution assessments compared to adults from lower SES backgrounds. No research to date, however, has investigated the developmental origins of this phenomenon, or investigated whether differences are specific to broader societal status, or if the link between status on mental state understanding can be manipulated experimentally.

Study Design

General design and procedure. The central aims of the present study pertain to understanding children's developing behavior, judgments, and reasoning in various resource allocation contexts. To achieve these aims, the present study utilized a 2 (Age

Group: 3-5, 6-8 years) X 2 (Status: Advantaged, Disadvantaged) X 2 (Type of Inequality: Individual, Group) between-subjects, experimental design. Participants were interviewed in one-on-one sessions with a trained research assistant. Participants heard a series of vignettes illustrated with pictures and drawings, displayed on a laptop computer and narrated by the research assistant. Following the implementation of the two between-subjects manipulations (see below for details), all participants completed four identical tasks assessing their perceptions of inequalities, intra- and intergroup attitudes, ToM capacities, and evaluations of third-person inequalities. The full methodological details are outlined in Chapter III (Methodology).

Status within the allocation. To examine how children's status within an unequal resource allocation influences their perceptions of allocations, intergroup attitudes, and ToM capacities, participants were randomly assigned to one of two conditions: *Advantaged* or *Disadvantaged*. Specifically, participants in the *Advantaged* conditions heard a vignette in which a peer gave more resources to participants' ingroup than outgroup, whereas participants in the *Disadvantaged* conditions heard a vignette in which a peer gave fewer resources to participants' ingroup than outgroup.

Type of Inequality. To examine whether children's perceptions of allocations, intergroup attitudes, and ToM capacities are influenced by the underlying reason for the unequal allocation of resources, participants were also randomly assigned to one of two Type of Inequality: *Individual* or *Group*. Specifically, children in the *Individual* conditions were told that the peer in charge of allocating the prizes did so based on participants' performance on a puzzle task, whereas participants in the *Group* conditions

were told that the peer in charge of allocating the prizes did so based on shared group membership.

Thus, there were a total of four experimental conditions in the present study: *Individual-Advantaged* (participants' ingroups received more resources due to performance on a puzzle task), *Individual-Disadvantaged* (participants' outgroups received more resources due to performance on a puzzle task), *Group-Advantaged* (participants' ingroups received more resources due to shared group membership with the peer in charge of allocating the prizes), and *Group-Disadvantaged* (participants' outgroups received more resources due to shared group membership with the peer in charge of allocating the prizes).

Participants. To investigate the aims of the present study, children between the ages of 3- and 8-years-old (N = 176) were interviewed. Specifically, 13 3-year-olds (5 female), 47 4-year-olds (29 female), 35 5-year-olds (17 female), 32 6-year-olds (14 female), 34 7-year-olds (20 female), and 15 8-year-olds (6 female) were interviewed. Participants' ethnicity was representative of the sampling population: 70% European American, 16% African American, 10% Latino/a, and 4% Asian American. The median annual household income was $91,918 (income data based on the median annual household income of the county in which the data was collected, see https://www.census.gov/quickfacts/fact/table/annearundelcountymaryland/PST045217). Six additional participants (n = 2 3-year-olds, n = 3 4-year-olds, and n = 1 6-year-old) were interviewed but not included in the final analyses due to experimenter error (n = 1) or a failure to understand the key premises of the studies (determined by failing the memory checks; n = 5).

Justification for age range. The age range of 3- to 8-years-old was chosen based on extensive past research examining children's developing conceptions of fairness regarding resource allocations and inclusion decisions. The younger boundary of the age range (3- to 5-years-old) was chosen based on past research indicating that children's conceptions of fairness regarding resource allocation emerges between 3- and 5-years-old (Baumard, Mascaro, & Chevallier, 2011; Kanngiesser & Warneken, 2012; Li, Spitzer, & Olson, 2014; Paulus, 2014; Rizzo et al., 2016; Rizzo & Killen, 2016; Schmidt et al., 2016). Specifically, by 3- to 5-years-old, children demonstrate the concerns for merit and rectifying inequalities in their allocations, judgments of allocations, and reasoning for their allocations and judgments. Further, research indicates that children begin to incorporate the concerns for group functioning, group loyalty, and traditions/customs into their inclusion decisions and intergroup attitudes by 3- to 6-years-old (Cooley & Killen, 2015; Mulvey, Rizzo, & Killen, 2015). Finally, past research utilizing similar assessments and design has documented 3- to 5-year-old children's ability to successfully understand and respond to the present methodology (Rizzo et al., 2016; Rizzo & Killen, 2016; Elenbaas & Killen, 2016).

The upper boundary of the age range (6- to 8-years-old) was similarly based on extensive past research on children's conceptions of fairness. Specifically, research has documented significant development in children's conceptions of inequalities during this period (Blake & McAuliffe, 2011; Blake et al., 2015; Rizzo & Killen, 2016). Further, children's ability to coordinate the concern for merit with other, moral, concerns including others' welfare (Rizzo et al., 2016) and rectifying inequalities (Damon, 1977) undergoes significant development between 6 and 8 years of age.

Finally, the age range was also chosen to assess the range of ToM competencies assessed in the present study. Wellman & Liu (2004) document significant development in children's proficiency at Contents False-Belief tasks between 4 and 5 years of age, and Belief-Emotion tasks between 5 and 6 years of age. Thus, an age range of 3- to 8-years-old captures the full range of children's developing competencies at the ToM assessments assessed in present study, including a range where children can be expected to fail both assessments (3- to 4-years-old), pass the Contents False-Belief assessment but fail the Belief-Emotion assessment (5- to 6-years-old), and pass both assessments (7- to 8-years-old). Importantly, all ToM analyses will control for participant age.

Justification for gender as a social category. Gender was chosen as the group membership category for the present study based on extensive research documenting children's understanding of gender as a social category. Research over the past 20 years has revealed that gender constitutes a salient social category early in childhood (Bigler & Liben, 2006; Horn & Sinno, 2014; Ruble, Martin, & Berenbaum, 2006) and plays a major role in social organization for young children; parents and teachers provide different toys and assign different chores on the basis of gender (Lytton & Romney, 1991), and peers self-segregate into gender groups from early in development (Mehta & Strough, 2009). Further, while children reject explicit exclusion and discrimination on the basis of gender (Conry-Murray, 2015; Conry-Murray & Turiel, 2012; Theimer, Killen, & Stangor, 2001), children have also been found to demonstrate an ingroup bias in their resource allocations and inclusion decisions (Dunham, Baron, & Carey, 2011; Mehta & Strough, 2009; Mulvey, Rizzo, & Killen, 2015; Renno & Shutts, 2015).

Procedure. All participants completed a series of four tasks in a fixed order: (1) *Perceptions of Allocations,* (2) *Intra- and Intergroup Attitudes Task,* (3) *Theory of Mind Task,* and (4) *Third-person Inequalities Task*. Importantly, the only differences between the four conditions (*Individual-Advantaged, Individual-Disadvantaged, Group-Advantaged, Group-Disadvantaged*) came at the beginning of the *Perceptions of Allocations Task*, when children received their resources. Following the allocation of resources, all participants were assessed on an identical set of assessments. Questions relate to how children perceived and evaluated the four different resource allocation contexts.

Perceptions of Allocations Task. The *Perceptions of Allocations Task* was designed to **investigate how children's status (Advantaged, Disadvantaged) relates to their perceptions of individual and group based inequalities** (**Aim 1**). Participants first completed a "Find the Difference" puzzle, and received resources along with other, virtual, peers based on either their performance on the puzzles (*Individual*) or their shared gender group membership with the peer allocating the resources (*Group*). Participants either received more (*Advantaged*) or fewer (*Disadvantaged*) resources than their peers. Following the experimental manipulation regarding how the resources were allocated, all participants were then asked a set of questions designed to assess their perceptions and evaluations of the allocation.

Specifically, participants were assessed on their evaluations of the allocation in terms of their moral judgments and evaluations of their own and others' welfare, their attributions regarding how an outgroup member might evaluate the inequality, and their evaluations of different ways of reallocating resources that would rectify the unequal

allocation (redistributing the resources equally, allocating new resources to the disadvantaged group). These assessments were designed to examine 1) children's own evaluations of the allocation, 2) children's expectations regarding how others will evaluate the allocation, and 3) how children think the allocation should be addressed, if at all (see Chapter III for the full list of assessments).

Intra- and Intergroup Attitudes Task. The *Intra- and Intergroup Attitudes Task* was designed to **determine how children's intra- and intergroup attitudes are related to their status within individual and group based inequalities, with age** (**Aim 2**). In this task, participants were assessed on their favorability towards an ingroup member and an outgroup member to examine how children's *intragroup* and *intergroup* (respectively) attitudes are influenced by the abilities of their ingroup members in each of the resource allocation contexts. Further, participants were assessed on their attributions of abilities towards their ingroup and outgroup members, to determine how children's perceptions of their peers' abilities are related to the allocation contexts. Finally, participants were told that they can pick a partner for a new puzzle context and were asked whether they would rather have an ingroup member or an outgroup member on their team, in order to determine how children weigh their intra- and intergroup attitudes when making a forced-choice inclusion decision.

Third-person Inequalities Task. The *Third-person Inequalities Task* was designed to **investigate how children's perceptions of third-person inequalities are related to their previous experiences with inequalities (Aim 3).** Following the initial resource allocation contexts, participants heard a short vignette about two characters, one of which has a lot of resources (wealthy) while the other has none (poor) (taken directly

from Rizzo & Killen, 2016). Following the vignette, participants were asked how they think a new set of resources should be allocated between the two characters, and judged whether other potential allocations (e.g., giving more to the wealthy character, giving more to the poor character, giving resources equally) are "Okay" or "Not Okay".

Theory of Mind Task. Finally, the *Theory of Mind Task* was designed to **examine the bidirectional relationship between children's ToM capacities and their responses to inequalities** (**Aim 4)**. Specifically, participants completed standard Contents False-Belief and Belief-Emotion ToM assessments (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004). These tasks were chosen based on past research documenting their role in children's moral development (Killen et al., 2011; Li et al., 2017; Mulvey, Rizzo, & Killen, 2015; Rizzo & Killen, 2017).

Hypotheses

The present study was designed to test hypotheses, based on the research outlined above, regarding each of the four aims of the present study. This section details the primary hypotheses for each aim.

Aim 1 hypotheses. We predicted that, with age, children would differ in their judgments of the allocation based on their own status (advantaged, disadvantaged) as well as the Type of Inequality (individual, group). Specifically, we predicted that, although younger children (3- to 5-years-old) would be primarily concerned with their relative status when evaluating the allocations – judging advantageous allocations to be more positive than disadvantageous allocations – older children (6- to 8-years-old) would begin to consider the Type of Inequality when making their evaluations (see Table 1). For

example, we expected that younger children would evaluate allocations that advantage themselves positively – judging them to be fair – even when allocations are based on ingroup biases. We expected that older children, however, would be better able to recognize the unfairness of allocations based on ingroup biases, and would thus evaluate biased allocation negatively, even when children themselves were advantaged by the allocation.

Table 1. Hypotheses regarding children's developing evaluations of allocations.

	Younger		**Older**	
Participants' Status	**Individual**	**Group**	**Individual**	**Group**
Advantaged	Positive	Positive	Positive	Negative
Disadvantaged	Negative	Negative	Positive/Neutral	Negative

Further, we hypothesized a similar pattern of results to emerge regarding children's own resource allocations. Specifically, we expected that, younger children would allocate a majority of the additional resources to themselves and their ingroup member (see Damon, 1977; Fehr, Bernhard, & Rockenbach, 2008), whereas older children would be more likely to rectify unequal allocations based on ingroup biases than those based on individual ability. In particular, we expected that older children would rectify ingroup biased allocations regardless of whether they themselves were advantaged or disadvantaged by the allocation. Thus, overall, we hypothesized that the ability to weigh multiple concerns (i.e. own desires, others' welfare, equity, and the rejection of prejudice) would emerge by 6 to 8 years old, as evidenced by children's judgments of, and allocations in response to, the experimental allocations of resources (see Table 2).

For example, we expected that younger children would allocate more resources to their ingroup, even when their group performed worse on the puzzle task (*Individual-Disadvantaged*). We expected that older children, however, would be better able to recognize the concern for merit, and would thus allocate more resources to the group who performed better at the puzzle task, even if that meant giving more to the outgroup (*Individual-Disadvantaged*)

Table 2. Hypotheses regarding children's developing resource allocation decisions.

	Younger		**Older**	
Participants' Status	**Individual**	**Group**	**Individual**	**Group**
Advantaged	Perpetuate	Perpetuate	Perpetuate	Rectify
Disadvantaged	Rectify	Rectify	Perpetuate/Equal	Rectify

These hypotheses were based on two lines of past research. First, research suggests that the rejection of personally advantageous inequalities does not emerge until 6- to 8-years-old (Blake & McAuliffe, 2011; Blake et al., 2015; Damon, 1977; Fehr, Bernhard, & Rockenbach, 2008). Second, although research suggests that children evaluate merit based inequalities to be fair (Rizzo et al., 2016) and gender based discrimination to be unfair (Theimer, Killen, & Stangor, 2001) by 3- to 5-years-old, research also suggests that children struggle to coordinate multiple concerns for fairness until 6- to 8-years-old (Damon, 1977; Rizzo et al., 2016).

Alternatively, it is also possible that younger children would prioritize the Type of Inequality over their own status within the allocation. This possibility is supported by

recent research demonstrating that children reject unequal allocations that favor their classroom ingroup members (Cooley & Killen, 2015). The participants in Cooley & Killen (2015), however, did not stand to benefit from the allocation. Thus, we hypothesized that the first-person nature of the present design will increase the saliency of young children's own desires.

Aim 2 hypotheses. We hypothesized that, with age, children's intra- and intergroup attitudes would be increasingly based on their relative status within the allocation and the underlying reason for the allocation (individual ability, ingroup bias). Specifically, we expected younger children to favor their ingroup over their outgroup member regardless of condition, whereas we expected older children's favorability judgments, attributions of abilities, and inclusion decisions to differ by context, suggesting an increasing concern for group functioning over group identity (Cooley & Killen, 2015; Killen et al., 2013; Rizzo, Cooley, Elenbaas, & Killen, 2017). In particular, in the *Individual* conditions, we expected that older children would be more favorable towards, attribute higher levels of ability, and be more likely to include peers who were advantaged by the allocation, due to their abilities. Based on research from SIT suggesting that intergroup conflict heightens outgroup dislike (Tajfel & Turner, 1979; Weisel & Böhm, 2015), and research from the SRD model suggesting that children revert to ingroup favoritism in forced-choice inclusion contexts (Killen et al., 2013; Mulvey & Killen, 2015), however, we expected that even older children would favor their ingroup members in the *Group* conditions.

Aim 3 hypotheses. We hypothesized that children's responses to the third-person allocation task would relate to their status within the previous first-person allocation

context. Specifically, we hypothesized that children who were disadvantaged by the first-person allocation context would be more likely than those who were advantaged by it to rectify the third-person inequality, as well as be more likely to positively evaluate attempts to rectify the inequality, and negatively evaluate perpetuating and equal allocations.

Aim 4 hypotheses. We have two separate sets of hypotheses regarding the bidirectional relationship between children's ToM capacities and their perceptions of inequalities. All ToM hypotheses are controlling for age.

ToM and Perceptions of Allocations. We hypothesized that children's ToM competencies would be related to their evaluations of the allocations. Specifically, we expected that children's ToM competencies would relate to their perceptions of how outgroup members would view the allocation, such that children with more advanced ToM capacities would be better able to differentiate their own judgments and emotional reactions from their expectations of others' judgments and emotional reactions. For example, we hypothesized that, for children who are advantaged by the allocation, those with more advanced ToM capacities will be more likely to recognize that a disadvantaged outgroup member would feel badly about the allocation than would those with less advanced ToM capacities.

These hypotheses are based on recent research investigating children's evaluations of intergroup inequalities based on school membership (Mulvey, Buchheister, & McGrath, 2016). Mulvey et al., (2016) presented children with a resource inequality context with three potential recipients: the participants themselves, a school ingroup member, and a school outgroup member. The results indicated that children who passed a

Contents False-Belief ToM assessment evaluated inequalities to be more unfair, particularly when an outgroup member was disadvantaged, than did children who failed the ToM assessment. The present study looked to replicate and extend the results of Mulvey, Buchheister, and McGrath (2016) in three key ways. First, the present study examined gender, rather than school membership, as the intergroup variable of interest. Second, the present study examined children's own allocations in response to the initial allocations, in addition to their evaluations. Finally, the present study examined the relation between children's ToM capacities and evaluations of unequal allocations in both first- and third-person contexts.

Experiences with Unequal Allocations and ToM. Our second set of hypotheses examined how children's evaluations of moral scenarios relate to their ToM capacities. We hypothesized that children's experiences with advantaged and disadvantaged status would influence their ToM capacities. Specifically, we hypothesized that children who experience disadvantageous allocations would be more likely to pass, controlling for age, the Contents False-Belief and Belief-Emotion ToM assessments than children who experienced advantageous allocations.

These hypotheses are based on research documenting the bidirectional relationship between children's ToM capacities and their evaluations of morally relevant contexts. In particular, Killen et al., (2011) found that children reliably passed a standard Contents False-Belief task at a younger age than they reliably passed a similar Contents False-Belief task that was embedded into a moral context. Killen et al., (2011) interpreted this effect by arguing that the saliency of harm to the victim led children to misattribute intentionality to the accidental transgressor. That is, witnessing the harm to the victim in

the morally relevant scenario made it more difficult for children to accurately assess the mental states (i.e. intentions) of the accidental transgressor. Leslie, Knobe, and colleagues (Knobe, 2005; Leslie, Knobe, & Cohen, 2006; Pettit & Knobe, 2009) have documented a similar phenomenon; children are more likely to misattribute intentionality when the outcome of an act is harmful. Thus, we hypothesized that children who witness harm to others (participants in the *Advantaged* conditions) would be less likely to accurately attribute mental states (i.e. less likely to pass the Contents False-Belief and Belief-Emotion assessments) than would children who do not witness harm to others (participants in the *Disadvantaged* conditions).

Chapter II: Literature Review

The moral principle of fairness is ubiquitous throughout the lifespan and appears to stem from a human orientation to cooperate and get along with others (Boehm, 2008; Damon, 1977; Gurven, 2004; Henrich, 2004; Tomasello, 2009). Issues of fairness pertain to multiple facets of social life, from the fair distribution of resources and opportunities, to decisions regarding whom to include and exclude from a group. Further, children's conceptions of fairness are a central component of their social and moral development (Killen & Smetana, 2015; Turiel, 1983, 1998). Research in developmental science has documented children's early emerging concern for fairness as a moral issue (Smetana, Jambon, & Ball, 2014), and children's developing understanding of the complexities that come with issues of fairness in intergroup contexts (Killen & Rizzo, 2014). When deciding how to allocate resources, for example, children consider multiple factors, such as how deserving each recipient is (Baumard, Mascaro, & Chevallier, 2011; Rizzo et al., 2016; Schmidt et al., 2016), the current distribution of resources (Elenbaas et al., 2016; Paulus, 2014; Rizzo & Killen, 2016), the group memberships of the recipients (Cooley & Killen, 2015; Dunham, Baron, & Carey, 2011; Elenbaas et al., 2016; Rizzo & Killen, 2017), the allocation norms of the group (Cooley & Killen, 2015; McGuire, Rutland, & Nesdale, 2015), and the resource being allocated when determining what is fair (Chernyak & Sobel, 2016; Rizzo et al., 2016). Children's emerging and developing

conceptions of fairness regarding resource allocation and inclusion decisions have been central to research on moral development.

In fact, resource allocation contexts are an important context in which children develop and apply their conceptions of fairness. Disputes over resources constitute a majority of social conflicts in early childhood (Hay, 2006; Killen & Smetana, 2015; Ross, Tesla, Kenyon, & Lollis, 1990), providing a plethora of experiences from which children construct their understanding of the multiple concerns for fairness. Deciding how to allocate and share resources with peers is one avenue in which children commonly express their concern for fairness. Past research has found that children are deeply concerned with fairness, and will take resources away from undeserving others (Blake & Rand, 2010; Fehr, Bernhard, & Rockenbach, 2008), or even throw resources away (Blake & McAuliffe, 2011; Shaw & Olson, 2012), in order to maintain what they believe is fair.

There are many contexts in which fairness is consistent with the concern for the equal treatment of all individuals, however, there are also contexts in which an equal allocations conflict with other fairness considerations. For example, when one person works hard to accomplish a goal while another person is lazy, dividing resources equally conflicts with dividing resources meritoriously. Further, it is often determined that, in order to maintain impartiality, certain factors, such as group membership or recipient identity, should *not* be relevant, because an unequal distribution on the basis of group membership would be deemed unfair. There are many contexts, however, in which context-specific concerns, such as recipient identity, group membership, group norms, and resource type, are not only relevant, but are in fact necessary for ensuring a fair distribution. For example, when allocating resources to members of historically

disadvantaged groups, recognizing the injustices committed to these groups is a critical first step in order to be able to address and rectify these past injustices (Elenbaas et al., 2016). Thus, when considering the fair means of allocating resources, individuals need to consider the factors that might lead to a priority for certain concerns over strict equality, as well as context-specific factors that can influence what is deemed fair.

The primary goal of this literature review is to demonstrate how children use different forms of moral, conventional, and personal reasoning when allocating resources, and that these concerns coexist from early in development. To address this aim, the following review contains three major sections. First, theoretical perspectives on individuals' conceptions of fairness from developmental science will be reviewed. The aim of this section is to provide an account of the theoretical frameworks that have motivated research on conceptions of fairness and distributive justice thus far. This section will also provide a brief account of social domain theory, and will highlight the important theoretical distinctions between social domain theory and past theoretical accounts. Further, this section will provide the theoretical framework from which the existing literature on children's developing conceptions of fairness will be interpreted. Second, a focused selection of the significant empirical work conducted on children's emerging and developing conceptions of fairness regarding resource allocation will be discussed. This section will be subdivided into research on the moral principles of distributive justice (equality, equity, merit), the social-conventional, context-specific, concerns that children incorporate into their allocation decisions (group membership, group norms), and the personal concerns that children consider when determining how they want resources to be allocated (personal desires, ownership concerns, relationships,

and mental states). Third, the current literature will be discussed in terms of the limitations with an outline for several current and future directions for researchers to examine. Finally, a conclusion will summarize the main points of the literature review.

Theoretical Accounts of Children's Conceptions of Fairness

Early theoretical approaches. Research on distributive justice originated with Piaget's (1932) account of children's developing conceptions of fairness, which argued that children progressed through three general phases of development. Piaget's goal was to determine whether children's reasoning about fairness reflected the philosophical categories espoused by deontologists, most notably Kant (1785/1959). Crafting dilemmas that were relevant to the child's world, Piaget (1932) interviewed over 500 children regarding their reasoning about a wide range of dilemmas that focused on fairness about punishment, stealing, dividing resources, cheating, and property damage. From these many data sets, Piaget concluded that children begin to understand concepts of distributive justice by middle childhood (8-10 years of age). Further, Piaget argued that children progressed through general stages of distributive justice understanding, beginning with the concern for equality. Children were then thought to develop the notions of merit and equity through interactions with peers.

Expanding on Piaget's (1932) account, Kohlberg (1969) examined moral development to a lifespan model. Although Kohlberg did not focus directly on resource allocation specifically, his work contributed the literature on moral development by further broadening the understanding of individuals' developing conceptions of fairness throughout the lifespan. Further extending the theoretical work of Piaget (1932) and Kohlberg (1969), Damon's (1977) theory of distributive justice followed a similar stage-

like progression. Adopting Piaget's (1932) interview methodology, Damon used a semi-structured interview method to probe children's reasoning about distribute justice to systematically test children's evaluations of different claims to resources such as effort, merit, status, as well as friendship status. From his data, he concluded that children progressed through three levels of distributive justice reasoning, with two sub-levels within each level. In the first level (0-A), children define fairness as whatever they want to occur, with the only justification being their own desires or irrelevant factors (e.g., "I should get it because I want to have it"). In the second level (0-B), children define fairness still in line with their desires, but attempt to justify it using external criteria (e.g., "I should get it because I'm a girl"). These first two levels are similar to one another in that the underlying motive for fairness is self-interest, but are different in that in level 0-B, children recognize that an external justification is needed, but fail to identify a legitimate justification, whereas in 0-A, children do not recognize the need for an external justification. Typically, children in these levels referenced predominantly irrelevant factors when judging the fairness of allocations to others.

Damon (1977) argued that children then advance to the third and fourth levels around 5- to 6-years-old. In the third level (1-A), children's conception of fairness is linked to the notion of strict equality (e.g., "Everyone should get the same"), whereas in the fourth level (1-B), children's conception of fairness is derived from reciprocity and a notion that people should be "paid back" for good or bad acts (e.g., "She should get the most because she made the most"). The shift from the first two stages to the third and fourth is noted in the move away from self-interest towards that of an objective principle; in level 1-A, children look to treat all individuals equally, whereas in level 1-B children

recognize that certain individuals are “deserving”, and this desert is based on reciprocity for previous actions.

Finally, Damon (1977) argued that children advance to the fifth and sixth levels around 7- to 8-years-old. In the fifth level (2-A), children understand that different individuals can have different - equally valid - justifications for their claims to a resource, but their attempts to compromise between the two competing claims are often poor (e.g., “She should get the most, but she could get some too”). In the final, sixth, level (2-B), children attempt to balance equality and reciprocity such that each of the claims are considered, but often only one is weighed over the other (e.g., “It would be fair if everyone got the same, but I would give the most to the kids that sold the most because that way they’ll all do better next time”). These final two levels are categorized by the ability to effectively consider multiple concerns. In level 2-A, fairness is defined by compromising between the two competing claims, whereas in 2-B it is defined as the direct resolution of it.

Damon (1977) argued that, with age, children progressed through each of these levels in a fairly consistent manner. He was, however, cautious about using the term “stage” (ultimately favoring the term, “level”) due to the fact that children were not entirely consistent in their reasoning, and did not always progress through the levels sequentially in his longitudinal study on their distributive justice reasoning (Damon, 1977). Additionally, while he did provide a general outline for at what age children, on average, reached each developmental milestone he was careful to note that these ages were flexible and highly dependent upon individual and environmental differences.

While each of these theories provides different accounts of children's social and moral development, all three of these theories suggest for a sequential ordering of developing moral concerns. In the domain of resource allocation, for example, the concern for the self was argued to develop first, followed closely by equality, and eventually by the concerns for merit and equity later in childhood.

Social domain theory and the social reasoning developmental model. Another theoretical approach to children's social and moral development is social domain theory (SDT; Smetana, Jambon, & Ball, 2014; Turiel, 1983). Contrary to the stage-like, sequential, developmental accounts put forth by Piaget and Damon, SDT argues that children are able to consider multiple forms of social and moral reasoning, which coexist from early in development. When reexamining the methodologies used by Piaget and Kohlberg, SDT researchers have found that complex scenarios (such as Kohlberg's Heinz dilemma) can be categorized into different types of social considerations (moral, societal, psychological) from which children as young as 2- to 3-years-old can then reason about the moral concerns for fairness, justice, and others welfare, while also acknowledging the importance of conventional factors such as group norms, group functioning, and the role of authority (Killen & Smetana, 2015; Smetana, Jambon, & Ball, 2014; Turiel, 1983) and concerns for the self and personal autonomy (Nucci, 1981). Yet, while research from SDT has documented children's concern for fairness as a moral issues, using resource allocation as a prototypic context in early childhood, little research from this perspective has specifically examined the *factors* that children consider when determining how to allocate resources.

Thus, SDT highlights the critical importance of examining the multiple social-contextual factors present in complex resource allocation vignettes. Examining when and how individual concerns emerge and develop, in addition to how they are coordinated with other concerns throughout development, provides for a more precise description of children's early emerging conceptions of fairness. Further, it is important to understand how concerns for fairness interact with other, non-moral concerns in the domain of resource allocation. For example, when do moral considerations about fairness take priority over conventional ones such as group functioning or societal viewpoints about status hierarchies? When allocating resources it is necessary to investigate whether and when status hierarchies and prejudicial stereotypes take priority over fairness decisions and how the role of personal choice and autonomy is weighed into decisions about allocation of resources. Thus, central to a developmental approach is the goal of documenting the origins and age-related changes regarding how children evaluate and use multiple forms of reasoning to make decisions about the distribution of resources throughout development.

Further expanding on this theoretical framework, the social reasoning developmental model (SRD; Killen & Rutland, 2011; Rutland & Killen, 2015) combined elements of SDT and social identity theory (SIT; Tajfel & Turner, 1979) to contextualize children's understanding of social knowledge in an intergroup setting. According to the SRD model, throughout development, individuals take an active role in reasoning about moral, group, and personal concerns when making social decisions. Further, the SRD model argues that it is not only children's understanding of each of these concerns that develops, but also their ability to integrate and coordinate multiple, potentially

conflicting, concerns when thinking and reasoning about their social world that undergoes significant development throughout childhood and adolescence. For example, while children's understanding of merit and equity undergo their own distinct patterns of development (e.g., understanding that increased effort does not always lead to increased production and understanding how historical inequalities impact present day individuals and groups), children's ability to coordinate between these concerns is also developing simultaneously (Rizzo & Killen, 2016; Rizzo et al., 2016).

Moral Concerns for Fairness

Drawing from philosophical theories of distributive justice (Rawls, 1971), developmental scientists have examined several key principles of distributive justice: equality, equity, and merit. Equality refers to the concern for the equal, impartial *treatment* of individuals in any given context, regardless of individuals' circumstances. Contrasting with strict equality, equity refers to the concern for the overall equal *outcomes* of all individuals, taking the current distribution into account. Although the term equity has been discussed in various ways in different literatures, for the purposes of this review, equity will be discussed specifically as the rectification of an inequality. Finally, merit refers to the concern for the deservedness of the recipients due to the effort or contribution each has made. The commons feature of each of these concerns is that they are impartial, generalizable, and are apply to the relative treatment of multiple individuals. Rawls (1971) discussed the application of these principles through the "veil of fairness", such that they are judged to be fair regardless of the recipients, group norms, or resources involved.

Equality. The origins and development of children's concern for equality in resource allocation have undergone extensive examination from multiple theoretical perspectives. In developmental science, Piaget (1932) and Damon (1977) emphasized the importance of equality understanding as a critical milestone in children's social and moral development, finding that children prioritize equality over selfish desires by roughly 5-years-old. While these theorists emphasized the importance of equality understanding, they may have underestimated just how early this understanding emerges. Researchers investigating the origins of equality understanding in infancy have used violation of expectation (VoE) looking time measures to assess infants' expectations regarding resource allocations. When presented with short allocation scenarios in which two puppets receive either the same number or a different number of resources, 15-month-old, but not 12-month-old infants, looked reliably longer at unequal allocations, suggesting infants expect others' to allocate resources equally (Schmidt & Sommerville, 2011; Sommerville, Schmidt, Yun, & Burns, 2013). Further, 16-month-old, but not 10-month-old, infants actively chose a puppet that they saw allocating equally over a puppet they saw allocating unequally (Geraci & Surian, 2011). The results of these studies on the developmental origins of equality understanding in infancy provide evidence of the early *roots* of fairness understanding. It is from these early expectations and preferences that children construct their conceptions of fairness, and develop the understanding of equality as a normative, moral concern.

To investigate children's understanding of equality as a normative, moral concern, researchers have used multiple methods, including behavioral allocations, judgments of allocations, and reasoning about allocations, to examine children's developing

conceptions of equality throughout childhood. Converging evidence from multiple studies suggest that by at least 3-years-old children allocate resources equally to third parties and judge equal allocations to be fair (Almås, Cappelen, Sørensen, & Tungodden, 2010; Damon, 1977; Fehr, Bernhard, & Rockenbach, 2008; Rizzo et al., 2016; Rizzo & Killen, 2016; Sigelman & Waitzman, 1991). Further, children as young as 3-years-old will share mostly equally with a peer, even if they could easily take all of the resources for themselves (Warneken, Lohse, Melis, & Tomasello, 2011) and choose to allocate resources equally amongst family members and strangers when resources are plentiful (Olson & Spelke, 2008). When presented with an inequality, children reject unequal allocations even when they benefit the self (Blake & McAuliffe, 2011) and will throw resources in the trash rather than favoring one person over another (Blake & Rand, 2010; Shaw & Olson, 2012). Altogether, these studies provide strong evidence for the claim that, by middle childhood, children have a firm grasp of the normative, moral concern for equality in resource allocation.

Equity. While research to date has revealed that children care about equality from a young age, fewer studies have examined if children's preference for equality extends to resource allocations in the context of preexisting inequalities, where the concern for equity arises. Assessing children's resource allocations in the context of a preexisting inequality (where one recipient has more than another) provides an opportunity to examine if children's concern for equal allocations extends to a context in which an equal allocation may be unfair. For example, it may be unfair to divide resources equally if the recipients have had an unequal access to resources in the past.

Recent research provides some evidence that preschool-age children recognize the concern for preexisting inequality. Li, Spitzer, & Olson, (2014) found that, when allocating one resource to an advantaged or disadvantaged recipient, 4- and 5-year-olds more frequently allocated the resource to the disadvantaged individual. Further, Paulus (2014) presented children with two allocation scenarios, one where they could share their resources with an individual who had very few resources, and the other where they could share with an individual who had a lot of resources already. Paulus (2014) found that children elected to share more resources with a poor individual than a wealthy one, suggesting that they are able to recognize the moral concern for equity. Without reasoning data, however, it is unclear whether participants in these studies allocated more frequently to the disadvantaged individual out of a concern for equity, or if they did so simply because they were unable to allocate resources equally. Given that young children have been documented to have a strong preference for allocating resources equally when possible, had children been given an even number of resources to allocate, it is possible that they would have preferred an equal allocation to an equitable one. A paradigm assessing children's conceptions of fairness with an equal number of resources, along with obtaining judgment data, is needed to properly address at what point in development children begin to favor equitable allocations over equal allocations of resources.

In another study, Rizzo & Killen (2016) presented 3- to 8-year-old children with a vignette about a wealthy recipient and a poor recipient and assessed their allocations of 6 resources, their judgments of equal, equitable, and unequitable allocations, and their reasoning for their allocations and judgments. This study revealed unique developmental patterns in children's allocations, judgments, and reasoning regarding equity and

equality. The youngest age group, 3- to 4-year-olds allocated resources equally, judged equal allocations to be fair, and primarily reasoned about notions of equality in their verbal justifications. The developmental roots of equity understanding, however, were documented in these young children; 3- to 4-year-old children judged equitable allocations more positively than unequitable allocations. This suggests that by 3- to 4-years-old, children are incorporating the concern for equity into their conceptions of fairness, and are not simply judging all unequal allocations to be similarly unfair. With age, children's understanding of equity continued to develop; 5- to 6-years-old children allocated a majority of the resources to the disadvantaged resources, and judged both equal and equitable allocations to be fair. Further, by 7- to 8-years-old, children's understanding of the prescriptive concern for equity began to influence their judgments of equality, with these oldest children judging equitable allocations more positively than equal allocations, and no longer reporting equal allocations to be fair.

Taken together, these results suggest that children's understanding of equity emerge early, by at least 3- to 4-years-old, in children's judgments about equitable allocations and their allocations when equality is not an option. With age, children continue to develop a more mature understanding of equity, recognizing that it is prescriptive, and are able to flexibly apply it in complex contexts with multiple competing claims.

Merit. The existing literature on merit has examined when children understand merit to be a legitimate reason for deviating from equality. The concern for merit arises in contexts where individuals work to acquire resources or opportunities. When one

individual works harder, or accomplishes more, that individual is then thought to have a legitimate claim to receiving more resources.

Similar to notions of equity, foundational research investigated merit in complex scenarios in which multiple concerns for fairness were contrasted against one another. More recent research, however, has challenged this late emergence by assessing children's allocations and judgments in contexts in which the concern for merit is isolated. Baumard, Mascaro, and Chevallier (2012) presented children with a vignette in which one character worked hard to bake cookies, while the other decided to go outside to play. They found that children were more likely to allocate a bigger cookie to the hardworking character, and gave more cookies to the hard working character when allocating three cookies. Similar to the methodological approach of Li, Spitzer, and Olson (2014), however, children in this study were also never given the opportunity to allocate resources equally. Given children's documented concern for equality in early childhood, it is possible that had children been given an even number of cookies, they would have allocated the cookies equally between the two characters. Children may had allocated meritoriously because they were trying to make the best of a bad situation (being forced to give more to someone), rather than because they view merit as a moral principle.

Rizzo et al. (2016) presented 3- to 8-year-old children with a similar vignette, in which one character worked hard while another was lazy, but asked children to allocate 6 resources between the two characters, allowing for an equal allocation. To address children's normative, prescriptive understanding of merit, Rizzo et al. (2016) further assessed children's moral judgments of meritorious, equal, and non-meritorious allocations. These results revealed that children as young as 3-years-old allocated

resources meritoriously, and judged both meritorious and equal allocations to be fair. This early emergence of merit understanding, however, does not negate the importance of later development; children's meritorious giving increased with age, and interacted with the type of resource being allocated (see below). Older children also judged equal allocations to be less ok with age, suggesting that the normative, prescriptive understanding of merit continues to develop, and influences children's judgment of equal allocations. These findings suggest that children's early understanding of merit provides the roots for later development of merit understanding, which incorporates multiple context-specific factors such as resource type and the permissibility of allocating resources equally.

In sum, children's developing understanding of the distributive justice principles of equality, equity, and merit appears to reflect a coexisting, context dependent, understanding of fairness. That is, from as young as 3-years-old, children recognize the concern for equality, equity, and merit, and are able to apply them in specific contexts. The results of these studies suggest that children understand that, with all else being equal, resources should be allocated equally amongst the recipients. When concerns for equity or merit arise, however, children recognize that deviations from equality can be fair. With age, children develop a more sophisticated understanding of each of these concerns, are able to apply them flexibly in more complex contexts, and recognize the prescriptive nature of these concerns, judging alternative allocations to be unfair.

Group Concerns

While the previous section discussed the impartial principles central to distributive justice, a full understanding of fairness means considering the context-

specific factors relevant to an allocation, including understanding the group-level concerns that children face when allocating resources (Sen, 2009). Thus far, two major group factors on children's developing conceptions of fairness can be identified from the literature: 1) Concerns regarding the *group membership* of the recipients receiving the resources and 2) concerns regarding the *group norms* guiding allocations in a given context. Beginning with allocations to those with close social relations and shared group membership, the first section will discuss research suggesting that children incorporate *to whom* they are allocating resources to into their allocation decisions. The following section will then discuss how group- and generic-level norms influence children's allocation decisions. Group norms, such as competitive versus cooperative group contexts, provide important information regarding which principles of distributive justice are prioritized in a given context. This section will close with a brief discussion of cultural norms as a context to examine the influence of allocation norms.

Group membership. The concern for group membership is a major, developing, concern in children's social decision making throughout childhood (Killen, Elenbaas, Rizzo, & Rutland, 2016; Killen & Rutland, 2011). Not surprisingly, then, numerous studies have documented how even young children preferentially allocate to ingroup over outgroup members (Dunham, Baron, & Carey, 2011; Olson & Spelke, 2008; Paulus, 2014; Renno & Shutts, 2015; Spielman, 2000; Tajfel & Turner, 1979). To assess the concern for group membership at the most basic level, Dunham et al. (2011) randomly assigned 5-year-olds to minimal groups by having them choose a colored coin from behind an experimenter's back and put on that color t-shirt. Participants were asked to allocate 5 resources to two recipients (one ingroup, one outgroup). Using this minimal

manipulation of group membership, participants were marginally more likely to favor their ingroup member than an outgroup member. These results suggest that, when given an odd number of resources to allocate, children as young a 5-years-old consider factors such as group membership, even when the concern for group membership is as minimal as being assigned to a t-shirt color group.

Olson and Spelke (2008) expanded on these findings by investigating the highly sailent, and more ecologically relevant, concerns for group membership by assessing children's allocations to family, friends, and strangers. They found that, when there were not enough resources for all of the recipients, children favored family over strangers and friends over strangers in their allocations. No differences, however, were found between children's allocations to family and friends. Importantly, though, children opted for an equal allocation when there were enough resources for all recipients. These results suggest that, while group membership, family and friend groups in particular, is a major concern for children when deciding whom to allocate resources to, this concern is coordinated with other concerns, such as the distributive justice principle of equality. Findings by Cooley and Killen (2015) further support this claim (see below).

Stereotypes and prejudice. While there are, at times, legitimate reasons to give partial or differential treatment to certain recipients, such as concerns for the self, reciprocity, collaboration, and - at times - group membership, there are other cases where such differential treatment is contradictory to the notion of fairness. Specifically, when partial treatment is given on the basis of racial, gender, religious, or other group memberships. Race and gender are known to influence adults' resource allocations (Schwartz, Struch, & Bilsky, 1990; Solnick & Schweitzer, 1999; Stepanikova, Triplett, &

Simpson, 2011), and research in developmental science is beginning to trace the origins of these effects. For example, in Dunham et al. (2011), while the minimal group assignment did influence children's allocation decisions, they also documented a strong effect for children's use of gender group membership in their allocations; by manipulating the gender of the recipients in the same design, they found that a majority of children allocated more resources to their gender ingroup.

Renno & Shutts (2015) expanded on the findings of Dunham et al. (2011) to assess both race and gender based allocations, and to determine if these results may be attributable to the fact that participants were forced into an unequal allocation (giving 5 resources to 2 recipients). They found that children as young as 3-years-old preferentially allocated resources to individuals of their same race and gender, even when an equal allocation was possible. Thus, instances of prejudice and bias are found across both gender and racial lines.

The investigation of racial based prejudice in resource allocation has yielded several key insights into children's developing resource allocation behavior. Replicating procedures used by Sigelman and Waitzman (1991) to investigate children's emerging concern for equality, equity, and merit, McGillicuddy-De Lisi, Daly, and Neal (2006) manipulated the race of the recipients to determine how racial-group membership impacts 7- and 9-year-old children's developing conceptions of fairness. They fond that, when allocating on the basis of merit, children gave more resources to a hardworking Black child, than to a hard working White child. When allocating on the basis of equity, however, children gave more resources to a disadvantaged White child than to a disadvantaged Black child. McGillicuddy-De Lisi et al. (2006) argued that these results

are consistent with work on aversive racism, citing that children respond more strongly to scenarios that are counter to their expectations (i.e. a hardworking Black child, a disadvantaged White child).

Following-up on these findings, Olson, Dweck, Spelke, and Banaji (2011) investigated children's responses to patterns of racially based inequalities. Children were presented with series of images depicting social group (e.g., Black individuals, White individuals) inequalities, and were asked to allocate resources to new members of these groups. This study found that 3.5- to 7.5-year-olds perpetuated the inequality regardless of the race of the disadvantaged group, whereas 7.5- to 11.5-year-olds perpetuated the inequality when White or Asian groups were disadvantaged, but rectified the inequality when Black groups were disadvantaged. These results diverge from the McGillicuddy-De Lisi et al. (2006) findings in that, in this context, disadvantaged Black recipients received more resources than disadvantaged White or Asian recipients. An overall convergence, however, is the use of racial group membership in children's allocations of resources.

In a final series of studies, Elenbaas and colleagues (Elenbaas & Killen, 2016; Elenbaas, Rizzo, Cooley, & Killen, 2016) expanded on McGillicuddy-De Lisi et al. (2006) and Olson et al. (2011) by examining children's developing responses to racially based inequalities on a societal level. These studies assessed 5- to 6- and 10- to 11-year-old children's coordination of equality, equity, as well as the racial group membership of the recipients across allocation and evaluation measures. For each of the following studies, participants witnessed images of groups of children who attended either poor or rich schools (Elenbaas et al., 2016) or hospitals (Elenbaas & Killen, 2016). These studies revealed that, with age, children judged inequalities in the distribution of medical

supplies more negatively, and were more likely to rectify such inequalities when African-American groups were disadvantaged. When European-American groups were disadvantaged, however, children opted for equal allocations.

In the context of inequalities in school supplies Elenbaas et al., (2016), younger European-American children were more likely to evaluate inequalities disadvantaging African-American schools as "ok" than inequalities disadvantaging European-American schools. Further, both African- and European-American 10- to 11-year-olds were more likely to say that an inequality disadvantaging African-American schools was "ok" than inequalities disadvantaging European-American schools. Finally, across both hospital and school contexts, older children were more likely to explicitly reason about the race of the recipient in their allocations and evaluations.

Group norms. Children's understanding of group norms has also been found to influence how children allocate resources. To examine the role of group allocation norms in children's and adolescents' social decision making, Killen, Rutland, Abrams, Mulvey, and Hitti (2013) told 9- and 13-year-olds vignettes about gender based groups who either have an equal allocation norm ("we share equally") or an unequal allocation norm ("we take more for ourselves"). Participants were then told about a member of the ingroup that wants to deviate from the norm (e.g., an individual in the ingroup with an equal allocation norm who wants to allocate unequally) and a member of the outgroup who matches the ingroup norm (e.g., an individual in the outgroup with an unequal allocation norm who wants to allocate equally), and were asked to choose who they would want to include into the group. The younger children overwhelmingly supported including the outgroup member who supported the equal allocation over the ingroup member who supported the

unequal allocation. Older children, however, were less likely to support including the outgroup member, suggesting that the concern for group norms increases with age. Mulvey, Hitti, Rutland, Abrams, and Killen (2014) expanded on these findings, demonstrating that older children were also less likely to support an equal ingroup deviant's decision to allocate resources unequally.

Cooley and Killen (2015) further extended the methodologies used by Killen et al., (2013) and Mulvey et al. (2014), by adapting it for use in younger children. Children ages 3- to 6-years-old were told about peer group members who deviated from either equal or unequal group norms. In this study, rather than gender groups, naturalistic classroom groups were used (classroom color). While most children gave negative evaluations of the deviant who wanted to allocate resources unequally, participants who did have positive evaluations of the deviant reasoned about the concerns for group functioning and the benefits to the group, suggesting a concern for the group norm. Further, with age, children were able to recognize that their evaluation of the deviant may differ from the groups' evaluation; while older (4.5- to 6-years) and younger (3- to 4.5-years) children both evaluated unequal allocators negatively, older children, but not younger children, recognized that the group may view them fairly because it would mean more resources for the group.

In these studies, however, the group norm was at the level of each specific group, rather than a broader, intergroup level norm – often called "generic" level norms. That is, in these contexts each group maintained its own allocation norm as part of its identity, and the overall generic norm was equality. How might the results differ in a context where the explicit generic norm was competitive or meritocratic? Recent work by

McGuire, Rutland, & Nesdale, (2015) looked to address this claim by investigating how children resolve conflicts between the norms for ingroup-favoritism and equality, when the generic level norm was either cooperative or competitive. Results suggest that generic level norms regarding resource allocations have a particularly strong influence on children's social judgments.

Supporting the findings of McGuire, Rutland, & Nesdale (2015), DeJesus, Rhodes, and Kinzler, (2014) assessed 4- to 9-year-old children's expectations and evaluations of different allocations in the context of intergroup competition over scarce resources. With age, children in this study reported that, although equal allocations to the ingroup and the outgroup more positively than allocations that benefited the group, such allocations were also less likely. As one participant commented, "people don't do that for real". While the results of this study appear to suggest that children are not concerned with notions of intergroup equality, it is important to note that these results are in the context of an explicit intergroup competition over scarce resources. As discussed above, Olson and Spelke (2008) demonstrated that children allocate resources equally between even friends/family and strangers in a non-competitive context when resources are plentiful. Together, these studies demonstrate the critical influence of group norms on children's resource allocations; competitive group norms increase the likelihood and evaluation of unequal, beneficial allocations relative to cooperative or neutral group norms.

Personal/Psychological Concerns

Research has begun to suggest that to *whom* the resources are being allocated influences individuals' allocations and conceptions of fairness. The roots of this

incorporation appear in research with infants, which suggests that infants preferentially allocate treats to individuals with whom they hold more positive social-evaluations of but extend far beyond this in childhood (Hamlin, Wynn, Bloom, & Mahajan, 2011; Hamlin, 2013; Kenward & Dahl, 2011; Moore, 2009). Importantly, children allocation decisions in 1st person and 3rd person allocation contexts yield drastically different results, providing strong evidence that children pay attention to who the recipients are, especially when they themselves might be involved in the allocation. Further, children consider both collaboration and reciprocity when deciding how to allocate resources. Finally, children consider factors such as group membership and stereotypes when allocating resources, often favoring members of their ingroups, or along stereotypic lines, providing a challenge to notions of fairness.

The role of the self as a recipient. Differences in children's 1st and 3rd party allocations may provide the strongest evidence to date that children incorporate whom is receiving the resources into their developing resource allocation decisions. As discussed in the equality section above, children demonstrate a robust preference for equal allocations of resources in 3rd party allocation contexts. It is also the case, however, that young children preferentially keep more resources for themselves than they share with a peer in windfall, Dictator Game-type scenarios (Fehr, Bernhard, & Rockenbach, 2008; Gummerum, Hanoch, Keller, Parsons, & Hummel, 2010; Kogut, 2012). While these findings are often interpreted as indicating a prioritization of self-interest over fairness, this interpretation may not generalize to children's real life allocation behaviors and conceptions of fairness.

In the classic Dictator Game, for example, an experimenter leads a child to a table and gives them a set of resources. The participant is then told that they can give however many resources to a peer as they choose, with different versions varying whether the peer is aware of the allocation, can later reciprocate with the participant, or can reject the allocation (Ultimatum Game). Given that children are attuned to ownership cues by early childhood (Friedman et al., 2013; Kim & Kalish, 2009; Rossano, Rakoczy, & Tomasello, 2011), from the child's perspective, it appears as though the experimenter is transferring the ownership of the resources from the experimenter to the child, and is then offering the possibility of a further transfer of ownership to the confederate or peer. While the concern for equality in resource allocation is present in the allocation paradigm, it is unclear why it is the only factor, and further, why children who opt to share some, but not an equal portion, of the resources are prioritizing self-interest over fairness. The resources are, after all, given to the participant by the experimenter; had the experimenter wanted the participant to allocate them equally, why wouldn't they have done this themselves? What claim does the other recipient have to the resources? Thus, we argue that children's allocation of more resources to the self in windfall, Dictator Game paradigms reflects a coordination of concerns for the ownership of their own resources, as well as concerns for the claims (e.g., reciprocity, relationships, etc.; see below) of the other recipient, rather than a strict prioritization of self-interest over fairness.

To this point, Fehr et al. (2008) assessed the developing coordination between children's concern for the self and their concern for others in an allocation paradigm using a modified Dictator Game. In this paradigm, children chose between two potential allocations of sweets between themselves and a partner. In the *sharing* trials, children

could choose between an allocation of 1 resource to both them and their partner, and an allocation of 2 resources to themselves and 0 resources to their partner – assessing a context in which children can give a resource to another at a cost to themselves. In the *prosocial* trials, children chose between an allocation of 1 resource to themselves and 1 to their partner, and 1 resource for themself and 0 resources to their partner – assessing a context in which children can give a resource to another at no cost to themselves. The results of this study revealed that the majority (91%) of 3- to 4-year-old children opted for the selfish allocation in the *sharing* trials and did not differ from chance in the *prosocial* trials – meaning that even when there was no cost to the participant, children still chose the allocation that disadvantaged the other roughly half of the time. With age, however, the tendency to not share decreased; 78% of 5- to 6-year-olds, and 55% of 7- to 8-year-olds chose the selfish option in the *sharing* condition. The results of this 1st party Dictator-type game provide strong evidence that children are concerned with who the recipients are, especially when they are a potential recipient, and are also aware of the other recipient when deciding how resources should be allocated.

Children's concern for the self as a recipient is not just present in Dictator-type games. Kanngiesser and Warneken (2012) investigated how children incorporate the concern for the self in a merit based allocation paradigm in which children completed a "fishing" task in parallel with a puppet (controlled by an experimenter). In this study, an experimenter manipulated the number of fish caught by the puppet such that it was either more or less than the number of fish caught by the child. Consistent with research documenting an early emerging concern for merit, children allocated more resources to themselves than to the puppet when they had caught more fish. When the puppet was

more meritorious, however, children then allocated the rewards more equally. That is, even in a context in which resources were earned (as opposed to just given windfall), children incorporated the concern for the self as a recipient into their conceptions of fairness.

A final piece of evidence for children's concern for the self as a recipient comes from Blake's and McAuliffe's (2011) investigation of children's responses to advantageous and disadvantageous inequality. Participants, 3- to 8-years-old, were matched with an unfamiliar, similar age, peer and were presented with several potential allocations. In the *advantageous* allocations, participant would receive 4 candies and their partner would receive 1. In the *disadvantageous* allocations, participants would receive 1 candy and their partner would receive 5. Critically, participants could either accept or reject the allocations; if they accepted, each recipient would receive their designated resources, if they rejected, both recipients would get nothing. The results revealed that, while children rejected *disadvantageous* allocations a majority of the time, it was not until 7- to 8-years-old that children reliably rejected *advantageous* allocations. That is, when younger children stood to gain from an inequality, they accepted it, but when they were disadvantaged by an inequality, they rejected it, opting instead for neither party to receive resources. Differences by participants' relative position in the allocation thus supports the idea that children consider *whom* the recipients are when deciding whether or not to accept an allocation. Taken together, children demonstrate a concern for who the recipients are when allocating resources, and the ability to coordinate concerns for the self with concerns for equity and merit, for examples, develops throughout childhood.

Mental state knowledge. A final consideration that influences children's developing conceptions of fairness regarding resource allocation is their recognition of the mental states of the recipients. For example, an emerging body of research is beginning to document children's understanding of the intentions behind a recipients claim (e.g., whether they genuinely need the resources they claim they do, or whether they are simply lying to get more resources) (Li, Rizzo, Burkholder, & Killen, 2017; Rizzo, Li, Burkholder, & Killen, 2017; Schmidt et al., 2016). More generally, children's ability to accurately identify the mental states (beliefs, desires, intentions) of others, in part by recognizing how they differ from their own, has been linked to children's moral development in many ways.

Children's developing theory of mind (ToM) capacities have their roots early in infancy, and continue to develop throughout childhood (Sodian et al., 2016; Wellman & Liu, 2004; Woodward, 2009). Traditional approaches to studying children's ToM capacities have documented an age-related progression in children's ability to recognize others' mental states, progressing from understanding others' desires, to their beliefs, and, in late childhood, their emotions (Wellman & Liu, 2004). Recent research has further documented the inter-relationship between young children's ToM capacities and their moral judgments (Fu, Xiao, Killen, & Lee, 2014; Smetana et al., 2012). Using a longitudinal design, Smetana and colleagues (2012) documented the bidirectional relationship between children's ToM capacities and their responses to moral scenarios. That is, children's ToM responses predicted their moral judgments at a later date *and* children's moral judgments predicted their ToM development.

Supporting these findings, Killen and colleagues (2011) documented how children's ability to accurately identify the mental states of an accidental transgressor related to their evaluations of the accidental transgression. In this study, children were told a short vignette in which a protagonist accidentally throws away another character's cupcake, which was hidden in a paper bag. Children were then assessed on an embedded, morally relevant false-contents ToM (MoToM) assessment and a standard, non-embedded, false-contents ToM assessment. Children who passed the MoToM assessment (indicating that they were able to accurately indicate that the protagonist did not know that the cupcake was inside the bag) were better able to recognize the accidental nature of the transgression than were children who failed the MoToM assessment. Interestingly, Killen and colleagues (2011) also found that, although children passed the standard ToM assessment at similar ages to previous research, it was not until later in development that they were able to pass the MoToM assessment (also see Leslie, Knobe, & Cohen, 2006). Thus, the results of this study suggests a bidirectional relationship between children's ToM and moral judgments – children's ToM capacities influence their moral judgments in a given scenario, *and* children's ToM capacities appear to be influenced by moral concerns.

Further, a small but growing body of research has begun to examine the relationship between children's ToM capacities and their developing conceptions of fairness. Mulvey, Buchheister, and McGrath (2016) presented children with a series of intergroup (school group) inequalities in which children themselves, children's ingroup members, and children's outgroup members received either more or fewer resources than the other recipients. In this study, children's evaluations of the inequalities were related

to their ability to pass a false-contents ToM assessment. Children with more advanced ToM capacities reported the inequality to be more wrong, particularly when it was an outgroup member who was disadvantaged by the inequality, than did children with less advanced ToM capacities. These results suggest that children's ToM capacities are related to their ability to recognize the harm caused by the inequality.

In another study, Mulvey, Rizzo, & Killen (2015) examined how children's ToM capacities were related to their support of a peer who wanted to challenge gender stereotypic expectations regarding what toys to play with. In this study, children who passed a false-contents ToM assessment were more likely expect others' to challenge, and were more likely to support those who challenge, gender stereotypes than were those who failed the assessment. Thus, children's ToM capacities appear to be linked to their ability to recognize that individuals' mental states are specific to them, and do not necessarily always conform to societal expectations based on group membership.

Finally, only one study to our knowledge has examined how children's ToM capacities relate to their resource allocation decisions in intergroup contexts. Rizzo and Killen (2017) presented 3- to 8-year-old children with highly gender stereotyped allocation contexts (sewing dolls, building monster trucks) in which one character worked hard and did a great job, while the other character was explicitly lazy and did not work hard. The gender of the meritorious child was experimentally manipulated across two conditions. In the *stereotype-consistent* trials, a female character did better at sewing dolls than a male character, or a male character did better at building trucks. In the *stereotype-inconsistent* trials, however, the opposite was true. After hearing the vignettes, children were then assessed on a belief-emotion ToM assessment. The results indicated

that children's allocations differed in the *stereotype-consistent* and *stereotype-inconsistent* contexts and as a function of their ToM capacities. Children who passed the belief-emotion ToM assessment were more likely to allocate based on merit, rather than on gender stereotypes, than were children who failed the ToM assessment.

Thus, these studies suggest that ToM competence is related to children's conceptions of fairness in two important ways. First, children's ToM competence is related to their ability to recognize the harmful consequences of an unfair allocation. Second, children's ToM competence is related to their ability to recognize that individuals do not always conform to stereotypic expectations based on group membership. By recognizing that individuals hold their own mental states, and do not always conform to stereotypic expectations, children with more advanced ToM capacities are thus better able to recognize heterogeneity within groups, which is critical to resolving intergroup conflicts fairly.

Current Directions and Conclusions

The preceding section reviewed and discussed the literature on children's developing resource allocations and conceptions of fairness. Principles of distributive justice (equality, equity, merit) reflect impartial and context-independent concerns for the relative treatment of multiple individuals (Rawls, 1971), and context-specific factors (resources, recipients, group norms), by contrast, reflect the important contextual concerns central to ensuring fairness (Sen, 2009). Though many of the studies investigating children's understanding of these concepts are framed within the literature on developmental science, several critical gaps remain in our understanding of children's developing conceptions of fairness regarding resource allocation.

The emergence and development of concerns for resource allocation. The emergence and development of specific concerns for resource allocation has remained a central focus of research on children's resource allocation behavior for several decades. Despite this persistent focus, much is still unknown regarding when and how many concerns for fairness emerge and develop. While the distributive justice principles (equality, equity, merit) have received extensive examination in this light, due to the more narrowed age-ranges used to assess children's concern for context-specific factors, less is known about how these factors emerge and develop throughout childhood.

The developmental trajectory for children's concern for the distributive justice principles of equality, equity, and merit is beginning to become fairly well understood. Evidence for the roots of these concerns are demonstrated in infants' expectations and preferences for allocations (Geraci & Surian, 2011; Schmidt & Sommerville, 2011; Sommerville, Schmidt, Yun, & Burns, 2013), inform judgments of allocations in early childhood (Blake et al., 2015; Elenbaas & Killen, 2016; Rizzo et al., 2016; Rizzo & Killen, 2016), guide allocations by middle childhood (Kanngiesser & Warneken, 2012; Li, Spitzer, & Olson, 2014; Rizzo et al., 2016; Rizzo & Killen, 2016), and are flexibly coordinated with multiple concerns by middle- to late-childhood (Damon, 1977; Elenbaas et al., 2016; Rizzo et al., 2016; Sigelman & Waitzman, 1991). What remains unknown, however, is if this general pattern of development is similar for group and personal concerns. Research on these factors has typically examined narrow age-ranges, using a diverse set of methodologies, which does not allow for a clear developmental analysis. Thus, the present study looks to examine how group and personal factors emerge and

develop throughout childhood to determine if the general developmental pattern of expectations to judgments to allocations to coordination holds true.

Additionally, in regards to the development of each specific concern, it remains unknown what cues children are using to determine when a given concern is relevant. For example, in the context of merit, studies to date have used vignettes in which the effort and the productivity of the characters are matched, such that the hard working character is also the more productive character. One study by Olson, Banaji, Dweck, and Spelke (2006) did vary the effort and production of the characters, such that the hard working character was at times unsuccessful, however, this study confounded these cues with luck. A systematic design that isolates children's concern for effort and production, without introducing additional concerns such as luck, is needed to determine what cues children are using to guide their application of the moral concerns discussed above.

Coexistence and weighing of concerns for resource allocation. In addition to how claims emerge and develop individually, it is also critical to know how children are able to weigh competing concerns in flexible, context-specific ways. While research has focused on the consideration of certain combinations of competing concerns (e.g., equality, equity, and merit), revealing that children's ability to flexibly consider these concerns arises around 6- to 8-years-old, children's ability to consider other sets of competing concerns remains unknown. There are several key areas where understanding the development of children's ability to consider multiple concerns has important societal implications.

First, understanding children's ability to simultaneously consider moral, group, and personal concerns is critical to understanding how children deal with the

complexities of the resource disputes that they face throughout their daily lives. For example, there are many instances where prejudice and ingroup bias have been found to factor into children's resource allocations. Children allocate more resources to gender- and racial-ingroup members than outgroup members from as young as 3-years-old (Renno & Shutts, 2015). Understanding the development of these factors is central to reducing children's use of them in allocation contexts. Additionally, research should be mindful of ways in which stereotypes and bias can indirectly influence resource allocations in complex contexts with multiple concerns. McGillicuddy-De Lisi et al. (2006) argued that racial/ethnic stereotypes about merit and need influenced children's allocations in merit and equity based contexts. Rizzo and Killen (2017) also found that gender stereotypes about merit influenced children's resource allocations. Thus, investigating how stereotypes about different groups influence children's conceptions of other concerns for fairness is of principle importance. Stereotypes about certain groups may also influence individual's conceptions about what is "necessary", which could in turn lead to harmful allocation practices for those groups due to the denial of necessary resources.

Taken together, the results of the studies on these topics described in the present review provide strong support for the claim that, from early in development, children are able to reason about multiple concerns for fairness in resource allocations. Children's early emerging concern for the distributive justice principles of equality, equity, and merit evidence their awareness of several impartial and generalizable fairness principles. Further, their incorporation of multiple context-specific factors, such as the identity of the recipients, the norms of the allocation context, and the resources being allocated into

children's allocation decisions suggest that these early emerging conceptions of fairness are applied flexibly, and depend highly on the context of the allocation.

Thus, the current dissertation project extends past research by investigating how children weigh moral, group, and personal concerns when they themselves are recipients in an unequal allocation context. This study also provides novel information regarding how children think and reason about the fairness of unequal allocations, particularly how children consider the underlying reason behind the allocation (whether resources were allocated by individual abilities or by ingroup biases). Further, this study expands our understanding of the social-cognitive mechanisms involved in children's developing conceptions of fairness by investigating the role of children's ToM capacities in their evaluations and perceptions of the allocations. Overall, the results of this study will provide important insights into how children evaluate and perceive unequal resource allocations that they themselves experience in their daily lives.

Chapter III: Methodology

This dissertation project aimed to examine how children perceive and evaluate various inequality contexts based on 1) their Status (Advantaged, Disadvantaged) and 2) the Type of Inequality (Individual, Group). This chapter will describe the sample, design, procedure, assessments, and data analytics procedures to be used to investigate these aims.

Participants

To investigate the aims of the present study, children between the ages of 3- and 8-years-old (N = 176) were interviewed. Specifically, 13 3-year-olds (5 female), 47 4-year-olds (29 female), 35 5-year-olds (17 female), 32 6-year-olds (14 female), 34 7-year-olds (20 female), and 15 8-year-olds (6 female) were interviewed. Participants' ethnicity was representative of the sampling population: 70% European American, 16% African American, 10% Latino/a, and 4% Asian American. The median annual household income was $91,918 (income data based on the median annual household income of the county in which the data was collected, see https://www.census.gov/quickfacts/fact/table/annearundelcountymaryland/PST045217). Six additional participants (n = 2 3-year-olds, n = 3 4-year-olds, and n = 1 6-year-old) were interviewed but not included in the final analyses due to experimenter error (n = 1) or a failure to understand the key premises of the studies (determined by failing the memory checks; n = 5).

Power analyses. G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) was used to conduct the power analyses for the present study. As detailed in the data analytic plan (see below), the highest level planned analysis for the present study is a 2 (Theory of Mind: Pass, Fail) X 2 (Status: Advantaged, Disadvantaged) X 2 (Type of Inequality:

Individual, Group) ANCOVA predicting participants' responses on one dependent variable, with age as a covariate. For example, assessing whether children's evaluation of others' welfare relates to their ToM competence (controlling for age), Status, and Type of Inequality. Follow-up ANOVAs will be conducted to interpret any significant 3-way interactions. In order to detect medium effects (f = .25) at an acceptable power (.80 or greater), with α = .05, numerator df = 3, and 8 groups, power analyses indicate that a sample of 176 participants would be appropriate.

Recruitment plan. Participants were recruited through their school. Recruitment efforts targeted preschools and elementary schools serving ethnically/racially and economically representative families in Maryland (Anne Arundel, Montgomery, Prince George's counties). Research assistants contacted school principals and directors with information about the study and an invitation to participate. Schools that agree to participate then coordinated with the Research Coordinator to schedule dates for consent form distribution and data collection. All children attending a participating school – within the age range (3- to 8-years-old) – were given a parental consent form to return. All children who returned a completed parental consent form were given the opportunity to participate in the study. Children with significant developmental delays or disorders – as indicated by a school administrator, director, or teacher – were offered the opportunity to participate, but their data was not collected or included in the analyses.

All research assistants who collected data for this project passed the CITI training for ethical treatment of human subjects and a State of Maryland Police background check. Training in the ethical treatment of participants was also provided in the lab as part of the preparation before the data collection phase of the project.

Consent and assent. Permission to conduct the study was obtained from all school principals/directors. Informed parental consent was confirmed through the return of parental consent forms (see Appendix A). Included on the parental consent form, parents had the option to opt-in to have their child's interview video recorded for data coding, educational and training purposes, and to be presented at academic conferences. Thirty-seven percent of parents consented to having their child's interview video recorded. Child assent was confirmed at the time of the interview; children were asked, "Would you like to play some games and answer some questions with me?" Children who agreed were interviewed. Children who did not wish to participate were asked up to two additional times at later dates.

Design

The dissertation project utilized a 2 (Age: Younger, Older) X 2 (Status: Advantaged, Disadvantaged) X 2 (Type of Inequality: Group, Individual) between-subjects design. All participants completed four tasks in a fixed order: (1) the *Perceptions of Allocations Task* (developed for the current project based on past research; Rizzo, et al., 2016, Rizzo & Killen, 2016, 2017), (2) the *Intra- and Intergroup Attitudes Task* (developed based on past research; Killen & Rutland, 2011; Rizzo & Killen, 2017; Rizzo, Cooley, Elenbaas, & Killen, 2017), (3) the *Theory of Mind Assessment Task* (Contents False-Belief and Belief Emotions ToM assessments; Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Rizzo & Killen, 2017; Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004), and (4) the *Third-person Inequalities Task* (Rizzo & Killen, 2016). The between-subject manipulations of status and Type of Inequality occurred at the onset of the *Perceptions of Allocations Task*. Following the critical manipulations, all participants

completed identical assessments throughout the remainder of the interview. The full protocol is available in Appendix C.

The first between-subjects factor regards children's status within the allocation: *Advantaged* or *Disadvantaged*. To manipulate children's status within the allocation, participants were randomly assigned to the *Advantaged* (received more prizes than the other group did) or *Disadvantaged* (received fewer prizes than the other group did). This factor was adapted from past research that has successfully assessed children's responses to being experimentally advantaged or disadvantaged by an inequality (Blake & McAuliffe, 2011; Blake et al., 2015).

The second between-subjects factor was the underlying reason for the allocation that children were presented with: *Individual* or *Group*. To begin with, all participants were told three key premises: (1) they will be divided into boys' and girls' groups, (2) they will complete puzzle activities, and (3) an age-matched peer will determine how prizes are given out. In the *Individual* conditions, participants were told that the allocation was the result of differing performance on the puzzle task, such that the peer would give more prizes to whichever group did better at the puzzles. In the *Group* conditions, participants were told that the allocation was the result of a gender-ingroup bias, such that the peer would give more prizes to their gender ingroup. This factor was based on past research documenting 3- to 8-year-old children's developing concern for merit as an individual factor leading to unequal allocations (Rizzo et al., 2016; Kanngiesser & Warneken, 2012) and evaluations of intergroup discrimination on the basis of gender (Conry-Murray, 2015; Theimer, Killen, & Stangor, 2001). Notably, to control for any perceptions of differential ability or performance on the puzzle tasks,

participants in the *Group* conditions were told that both groups performed equally on the puzzle activities.

Thus, the present study utilized four between-subjects conditions: *Individual-Advantaged, Individual-Disadvantaged, Group-Advantaged,* and *Group-Disadvantaged.* In summary, in the *Individual-Advantaged* condition, participants were told that the peer gave their group more prizes because they did a better job at the puzzle activities. In the *Individual-Disadvantaged* condition, participants were told that the peer gave the other group more prizes because they did a better job at the puzzle activities. In the *Group-Advantaged* condition, participants were told that the peer gave their group more prizes because they are in their gender ingroup. And in the *Group-Disadvantaged* condition, participants were told that the peer gave the other group more prizes because they are in their gender ingroup.

Following the presentation of the between-subjects manipulations all participants completed 4 identical tasks. In the *Perceptions of Allocations Task*, participants were assessed on their evaluations of the allocation, expectations of own and others' welfare, and their evaluations of different prize allocations. In the *Intra- and Intergroup Attitudes Task*, participants reported on their favorability and perception of abilities for ingroup and outgroup members, as well as a forced-choice inclusion question about whom they would like to work with in the future. In the *Theory of Mind Assessment Task*, participants completed standard Contents False-Belief and Belief-Emotion ToM assessments (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004). Finally, in the *Third-person Inequalities Task*, participants heard a vignette about an unrelated, third party inequality between two

characters, and allocated, and evaluated allocations of, resources to those two characters (Rizzo & Killen, 2016).

Procedure

Trained research assistants – blind to the hypotheses of the study – interviewed participants individually in a quiet space at their school. Participants were seated at a table and informed that they would hear some stories and play some games on a laptop computer. The research assistant then informed the participant that they would be asked several questions about what they think about the games and the characters in the games, that there are no "right" or "wrong" answers, that all responses are anonymous, and that they can stop at any time. The protocol was administered using Microsoft Office PowerPoint 2013 (see Appendix C for the full protocol). Prior to beginning the experiment, participants were trained on how to use the 6-point Likert-type scale used throughout the protocol. Participants received a brief debriefing at the end of the protocol specific to their condition (see below for details). Following the interview, participants were escorted back to their classrooms. Interviews lasted between 18-26 minutes to complete. Participants did not receive any form of direct compensation for their participation; in-game prizes (see below) were awarded to participants, but these in-game prizes did not translate to any form of compensation or reward outside the confines of the experimental paradigm.

Measures

Participants completed a series of assessments within each task. The assessments in the *Perceptions of Allocations Task* were developed based on recent research examining children's developing conceptions of fairness in resource allocation contexts

(e.g., Elenbaas et al., 2016; Mulvey, Buchheister, & McGrath, 2016; Olson & Spelke, 2008; Rizzo et al., 2016; Rizzo & Killen, 2016; Schmidt et al., 2016; see Killen, Elenbaas, Rizzo, & Rutland, 2016 for a review). The assessments in the *Intra- and Intergroup Attitudes Task* were based on research on children's intergroup attitudes and inclusion decisions (Cooley & Killen, 2015; Killen et al., 2013; Mulvey et al., 2014). The assessments in the *Theory of Mind Task* were taken directly from past research on children's ToM development (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004). And the assessments in the *Third-person Inequalities Task* were taken directly from past research on 3- to 8-year-olds conceptions of inequalities (Rizzo & Killen, 2016). The following sections provide the details for each task.

Perceptions of Allocations Task. Participants were told that they have been chosen to join an online puzzle club, where they can complete puzzles with other children to earn prizes for their groups. Participants were then introduced to their ingroup member (gender ingroup) and two outgroup members (gender outgroup). Gender was selected as the group category for the present study based on past research indicating that gender is a highly salient social category for children at these ages (Bigler & Liben, 2006; Horn & Sinno, 2014; Mulvey et al., 2014; Mulvey, Rizzo, & Killen, 2015; Ruble, Martin, & Berenbaum, 2006).

Research assistants then told participants that everyone would be completing the same "Find the Differences" puzzles (see Figure 1). Participants were then given training on how to complete the puzzles, and subsequently completed their first puzzle. Given older children's greater degree of familiarity with the "Find the Difference" puzzles,

younger children (and older children who indicated that they were not familiar with the puzzles) were given an elaborated introduction to the puzzles in which the experimenter walked through several practice instances with the participant until they demonstrated that they understood the premise of the puzzles. To control for actual performance on the puzzles, research assistants waited for participants to find 3 (of the possible 10) differences in the puzzle and then ended the activity saying, "Great job! You found 3 differences!" After completing their first puzzle, participants were then shown how well everyone did at the puzzles. In the *Individual-Advantaged* condition, participants were told that their group won because they found more differences, whereas in the *Individual-Disadvantaged* condition, participants were told that the other group won because they found more differences. To ensure that the Type of Inequality manipulation was salient, participants in both of the *Group* conditions (*Group-Advantaged, Group-Disadvantaged*) were told that both groups won because they both found the same number of differences. This ensured that children in the *Group* conditions did not falsely attribute the inequality to performance on the puzzles.

Figure 1.

Figure 1. One of the "Find the Differences" puzzles that participants completed. Participants indicated differences by pointing or verbally stating the 3 (of the 10) differences that exist between the two pictures.

After hearing how each group performed on the puzzles, participants were introduced to the peer, Alex, who was in charge of giving out the prizes. In the *Individual* conditions, participants were told, "Alex says that she/he doesn't think it should matter whether you're in the girls' or boys' group. She/he says that she/he is going to give more prizes to the winners". In the *Group* conditions, participants were told, "Alex says that she/he doesn't think the prizes should be given out based on how everyone does on the puzzles. She/he says that she/he is a girl/boy, so she'll/he'll probably just give more to the girls/boys. Participants were then shown an animation (via PowerPoint) of Alex allocating the prizes accordingly. This procedure (puzzle completion, performance reveal, Alex's stated allocation plan, and actual allocation) was then repeated once more (a total

of two times). This replication ensured that participants understood both of the salient manipulations, and that Alex's allocations were systematic, rather than a one-time occurrence.

Participants were then assessed on two memory questions to confirm their understanding of the premises and manipulations: (1) "Can you tell me who did a better job on the puzzles? Did your group win, the girls'/boys' group win, or did both groups win and find the same number of differences?" and (2) "Can you tell me who has more prizes? Does your group have more, the girls'/boys' group has more, or do both groups have the same number?" Participants who failed the memory check were retold the vignette from the end of the second replication (where the relevant information is revealed) and were reassessed on the memory checks up to two additional times. Participants who failed the memory checks all three times were excluded from data analyses.

Dependent measures. All participants, regardless of condition, then completed a set of assessments in a fixed order (see Table 3). Children were assessed on their (1) Judgment of the Allocation ("How OK or not OK do you think it is that some kids got more prizes than others?"), (2) Reasoning for Judgment of Allocation ("Why do you think it is OK/not OK?"), (3) Evaluation of Emotional Reaction to the Allocation ("How good or bad do you feel about getting X prizes?"), (4) Perception of Control ("Was there anything that the girls/boys in the [disadvantaged group] could have done to get more prizes?"), (5) Reasoning for Perception of Control (if yes, "What could you/they have done?"; if no, "Why not?"), (6) Perceptions of Others' Emotional Reaction to the Allocation ("How good or bad does [member of outgroup] feel about getting Y prizes?"),

(7) Perceptions of the Outgroup's Judgment ("How OK or not OK does [outgroup member] think it is that some kids got more prizes than others?"), and (8) Reasoning for Perceptions of the Outgroup's Judgment ("Why does she/he think it is OK/not OK?").

Participants were then told about a peer who wants to collect up all of the prizes and distribute them equally, and were asked about their (9) Judgment of an Equal Redistribution ("How OK or not OK do you think it would be to collect up all of the prizes and give everyone the same number?"), (10) Reasoning for their Judgment of an Equal Redistribution ("Why do you think it is OK/not OK?"), and (11) Expectations Regarding the Identity of the Redistributor ("Do you think whoever suggested this is in the girls' group, the boys' group, or are you not sure?").

Finally, participants were told that the redistribution did not take place, but that there were 8 new prizes to allocate. Participants were assessed on their (12) Judgment of Perpetuating Allocation ("You could give more to the [advantaged group] because they got more prizes before. How OK or not OK would that be?"), (13) Judgment of Rectifying Allocation ("Or you could give more to the [disadvantaged group] because they got fewer prizes before. How OK or not OK would that be?"), (14) Judgment of Equal Allocation ("Or you could give everyone the same number because it's equal. How OK or not OK would that be?"), (15) Own Allocation ("Can you show me how you think the prizes should be given out?"), and (16) Reasoning for Own Allocation ("Why do you want to give them out this way?").

Table 3. List of dependent measures included in the Perceptions of Inequalities Task.

Task Name	**Scale**

1) Judgment of the Allocation	Likert-type 1-6
2) Reasoning for Judgment of the Allocation	Open ended
3) Evaluation of Emotional Reaction to the Allocation	Likert-type 1-6
4) Perceptions of Control	Categorical
5) Reasoning for Perceptions of Control	Open ended
6) Perceptions of Others' Emotional Reaction to the Allocation	Likert-type 1-6
7) Perceptions of Outgroup Judgment	Likert-type 1-6
8) Reasoning for Perceptions of Outgroup Judgment	Open ended
9) Judgment of Equal Redistribution	Likert-type 1-6
10) Reasoning for Judgment of Equal Redistribution	Open ended
11) Expectations Regarding the Identity of the Redistributor	Categorical
12) Judgment of Perpetuating Allocation	Likert-type 1-6
13) Judgment of Rectifying Allocation	Likert-type 1-6
14) Judgment of Equal Allocation	Likert-type 1-6
15) Own Allocation	Categorical
16) Reasoning for Own Allocation	Open ended

Intra- and Intergroup Attitudes Task. Participants were then assessed on their favorability, perceptions of abilities, and inclusion decision regarding an ingroup and outgroup member.

Dependent measures. Participants were asked a series of questions assessing their intra- and intergroup attitudes (see Table 4). Specifically, they were asked for their (1) Ingroup Favorability ("How much do you want to be friends with [ingroup member]?") and (2) Attributions of Ingroup Member's Ability ("How good or bad do you think [ingroup member] is at doing puzzles?"). Next, participants were asked identical questions about an outgroup member from the puzzles: (3) Outgroup Favorability ("How much do you want to be friends with [outgroup member]?") and (4) Attributions of Outgroup Member's Ability ("How good or bad do you think [outgroup member] is at doing puzzles?"). Finally, participants were assessed on their (5) Inclusion Decision ("If you were picking new partners for a puzzle competition, and you could only pick on

partner, who would you pick: [ingroup member] or [outgroup member]?") and (6) Reasoning for Inclusion Decision ("Why do you want to pick them?").

Table 4. List of dependent measures included in the Intra- and Intergroup Attitudes Task.

Task Name	**Scale**
1) Ingroup Favorability	Likert-type 1-6
2) Attribution of Ingroup Member's Abilities	Likert-type 1-6
3) Outgroup Favorability	Likert-type 1-6
4) Attribution of Outgroup Member's Abilities	Likert-type 1-6
5) Inclusion Decision	Categorical
6) Reasoning for Inclusion Decision	Open ended

Theory of Mind Task. Next, participants completed two standard ToM assessments: Contents False-Belief and Belief-Emotion (Harris, Johnson, Hutton, Andrews, & Cooke, 1989; Wellman, Cross, & Watson, 2001; Wellman & Liu, 2004).

Contents False-Belief. Participants were shown an image of a Crayon box and were asked what they think is inside. The contents of the box was then revealed to be crackers, not crayons. Then, participants were introduced to a character, Maddy, who had never seen inside the box. Two memory checks will be given: (1) "What is inside the Crayon box right now?" and (2) "Has Maddy seen inside this box?" If a participant failed a memory check, the entire vignette was reread and they were reassessed on both memory questions up to two additional times. If a participant failed either memory check on the third rendition, they were coded as failing the assessment. Participants then responded to the target question: "What does Maddy think is inside the Crayon box? Crackers or Crayons?" To pass the assessment, participants needed to say, "Crayons". Other responses (e.g., "Crackers") were coded as failing the assessment.

***Belief-Emotion*.** Participants were shown an image of a Legos box and were introduced to a character, Jackie. Participants were asked what they thought was inside the Legos box (or what was supposed to be inside the Legos box). Once the participant said, "Legos", the research assistant then continued the vignette by saying, "Well, Jackie hears you say this, and she says, 'Oh good, because I love Legos. Legos are so much fun to play with. I'm glad it isn't rocks because I really do not like rocks. Rocks are not fun to play with at all.'" The vignette then continued with Jackie leaving the scene to go outside to play, and the research assistant then revealed that the box actually contains rocks, not Legos. A memory check was then be given: "What toy does Jackie like to play with: Legos or Rocks?" If a participant missed the memory check, the entire vignette was reread to the participant and the memory check was reassessed up to two additional times. If a participant failed the memory check on the third rendition, they were coded as failing the assessment.

Finally, the vignette continued with Jackie returning and participants were assessed on the two target questions: (1) "Let's give Jackie this box. How does Jackie feel right when we give her the box, before she can open it up: Happy or sad?" and (2) "And how does Jackie feel after she looks inside the box: Happy or sad?" To pass the assessment participants must have responded "Happy" to the first target question and "Sad" to the second target question. Participants who missed either or both of the target questions were coded as failing the assessment.

Third-person Inequalities Task. Finally, participants heard a short vignette about two characters, one of which had a lot of resources while the other had none (see Table 5; assessments taken directly from Rizzo & Killen, 2016). To control for

perceptions of merit, both characters were described as working hard and finding 3 resources. Two memory checks were given to ensure that participants understood the premises of the story: (1) "When they went out to find [resources], did Nathan find more, did Todd find more, or did they find the same number?" and (2) "Can you tell me who has more [resources] right now?" If a participant failed a memory check, the entire vignette was reread and they were reassessed on both memory questions up to two additional times. If a participant failed either memory check on the third rendition, the interview concluded and participants were escorted back to their classrooms. In these cases, no data was collected for children's responses to the Third-person Inequalities Task.

Dependent measures. Following the vignette, participants were assessed on their (1) Judgment of Perpetuating Allocation ("You could give more to Todd because he has more [resources]. How OK or not OK would that be?"), (2) Judgment of Rectifying Allocation ("Or you could give more to Nathan because he has fewer [resources]. How OK or not OK would that be?"), (3) Judgment of Equal Allocation ("Or you could give Nathan and Todd the same amount because it's equal. How OK or not OK would that be?"), (4) Own Allocation ("Can you show me how you think the [resources] should be given out?"), and (5) Reasoning for Own Allocation ("Why do you think they should be given out like that?").

Table 5. List of dependent measures included in the Third-person Inequalities Task.

Assessment Name	**Scale**
1) Judgment of Perpetuating Allocation	Likert-type 1-6
2) Judgment of Rectifying Allocation	Likert-type 1-6
3) Judgment of Equal Allocation	Likert-type 1-6
4) Own Allocation	Categorical
5) Reasoning for Own Allocation	Open ended

Data Coding and Reliability

Judgment, evaluation of welfare, favorability, and attribution of ability assessments were scored on a 6-point Likert-type scale from 1 = Really [not OK/bad/don't want to] to 6 = Really [OK/good/want to]. The Perceptions of Control Over the Inequality assessment was coded as either "Yes" or "No". The Attribution of Equal Redistribution Probe was coded as "Girls' Group", "Boys' Group", or "Not Sure". Inclusion decisions were coded as "Ingroup member" or "Outgroup member". Participants' allocations were coded as "More to [disadvantaged]", "More to [advantaged]", or "Equal". Reasoning assessments were content coded for analyses (see below for details).

Reasoning coding. Participants' responses to reasoning assessments were coded for analyses into conceptual categories based on the three domains detailed in social domain theory (Smetana, Jambon, & Ball, 2014; Turiel, 1983) and expanded upon in the SRD model (Killen & Rutland, 2011). Three coding schemes were developed; each coding scheme reflecting the specific concerns participants were hypothesized to reference for each given question.

The first coding scheme was used to code participants' references in the Reasoning for Judgment of the Allocation, Reasoning for Perceptions of Outgroup Judgment, Reasoning for Judgment of Equal Redistribution, Reasoning for Own Allocation, and Reasoning for Own Allocation in the Third-person Inequalities Task assessments. The coding categories for these assessments included: *Equity/Equality* (i.e., appeals to the principles of equity or equality, including appeals to the equitable/equal

treatment of others and the equitable/equal division of resources; e.g., “It’s not OK that some kids have more than others”, “I want to give everyone the same number”), *Merit* (i.e., appeals to the characters’ effort or performance, or to the concept of deservedness; e.g., “We did a better job than they did”), *Others’ Mental States* (i.e., appeals to others’ welfare, emotions, desires, or preferences; e.g., “She’ll feel sad”, “She just wants more”), and *Own Mental States* (i.e., appeals to participants’ own welfare, emotions, desires, or preferences; e.g., “I just want more”, “I’d feel bad”).

The second coding scheme was used to code participants’ references in the Reasoning for Perceptions of Control assessment. The coding categories for this assessment included: *Structural Biases* (i.e., appeals to structural biases inherent in the allocation; e.g., “They tried, but still didn’t get enough”, “The boy doesn’t give to the girls”), *Merit* (i.e., appeals to the characters’ effort or performance, or to the concept of deservedness; e.g., “They did a better job”, “He didn’t even try”), and *Protests* (i.e., references to protesting the allocation by either appealing to a higher authority or to the outgroup; e.g., “Tell the teacher that he’s not being fair”; “Ask the boys to share”).

The third coding scheme was used to code participants’ references in the Inclusion Decision Reasoning assessment. The coding categories for this assessment included: *Ingroup Membership* (i.e., appeals to the concern for ingroup membership or ingroup loyalty; e.g., “He’s on the boys team with me”, “Girls are the best”, “I want to pick a boy to be my partner”). *Ability* (i.e., appeals to the characters’ competence, effort, or abilities; e.g., “She’s really good at the puzzles”, “He stinks at these games!”), *Benefits of Diversity* (i.e., appeals to the benefits of diversity and inclusion, including references to “trying out” new partners and learning from others who are different; e.g., “ ‘cause

she's on the girls' team, and I'm on the boys'", "It's good to switch it up", "Maybe he could help me with the puzzles"), and *Personal Concerns and Personal Relationships* (i.e., appeals to participants' personal preferences or desires, and appeals to maintaining or establishing relationships not related to ingroup membership or appeals to diversity; e.g., "I like working with him", "She's my best friend").

For all reasoning assessments, if participants' responses did not fit into one of the coding categories, their responses were coded as *Other/Undifferentiated.* Participants' responses for each category were coded as 1 (full reference), 0.5 (partial reference), or 0 (no reference). Two research assistants, blind to the hypotheses of the study, conducted the coding. On the basis of 25% of the interviews (n = 46), Cohen's κ = .92 for inter-rater reliability.

Debriefing

At the conclusion of the experimental paradigm, participants in the *Disadvantaged* conditions were debriefed to ensure that no participants felt badly about the potentially upsetting allocations. For the debriefing, the character who allocated the resources in the *Perceptions of Allocations Task* returned and provided a message to participants. Participants in the *Individual-Disadvantaged* conditions were told that the allocating character made a mistake in the beginning, and were given 6 more prizes to rectify the mistake. Participants in the *Group-Disadvantaged* conditions were similarly told that the allocating character realized that they shouldn't have given more prizes to others just because they're a girl/boy, and participants received 6 more prizes to make up for the initial allocation.

Data Analytic Plan

The following sections will detail the three data analytic models that were used to analyze participants' responses on the various assessments in the present study. Initial analyses tested for differences by participant gender. No significant differences by participant gender were found, and thus gender was excluded from all future analyses. This approach is consistent with past research, which has not documented significant effects for participant gender in these types of assessments.

Judgments, evaluations, and attributions. To test hypotheses regarding participants' judgments, evaluations and attributions (all coded on a continuous 6-point Likert-Type scale) Univariate and Repeated Measures ANOVAs and ANCOVAs were conducted. Specifically, analyses testing for Age by Status by Type of Inequality effects and interactions were conducted using 2 (Age: Younger, Older) X 2 (Status: Advantaged, Disadvantaged) X 2 (Type of Inequality: Individual, Group) ANOVAs. Analyses testing for ToM by Status by Type of Inequality effects and interactions were conducted using 2 (ToM: Pass, Fail) X 2 (Status: Advantaged, Disadvantaged) X 2 (Type of Inequality: Individual, Group) ANCOVAs, with participants' age as a covariate.

Reasoning. To test hypotheses regarding participants reasoning data, Repeated Measures ANOVAs with participant's judgments and decisions as the predictor variables and the reasoning categories as the outcome variables were conducted. For analyses assessing how participants' reasoning relates to their various judgments (scored on a 6-point Likert-type scale), participants' judgments were first dichotomized (e.g., "Okay", "Not Okay"). Then, for each reasoning assessment, analyses were conducted on the three most frequently referenced reasoning categories. This data analytic procedure is consistent with other studies analyzing children's reasoning data (see Killen & Smetana,

2015; Wainryb & Recchia, 2014). Specifically, the use of mixed effects ANOVAs for examining between- and within-subjects effects is a widely used approach due to the way the data are coded (1: full reference, 0.5: partial reference, 0: no reference). Other models, namely logistic and loglinear regressions, are not appropriate for this type of analysis plan, and may confound the coding scheme with seemingly "missing" data (see Posada & Wainryb, 2008 for a full explanation of this data analytic approach).

Allocation and inclusion decisions. To test hypotheses regarding participants' allocation and inclusion decisions in each of the four allocation contexts, generalized linear models with a binomial probability distribution and a logit link function were conducted. For each model, main effects for Age, Status, and Type of Inequality were tested first, followed by analyses examining interactions between the main effects. Wald χ^2 tests were conducted to interpret significant effects.

Chapter IV: Results

The results of the present study are conceptually organized into subsections corresponding to each of the four primary aims. The first section of results will address Aim 1: How children's status (Advantaged, Disadvantaged) relates to their perceptions of individual and group based inequalities. The next section will address Aim 2: How children's intra- and intergroup attitudes are related to their status within individual and group based inequalities. The following section will address Aim 3: How children's perceptions of third-person inequalities are related to their previous experiences with inequalities. The final section will address Aim 4: Examining the bidirectional relationship between children's ToM capacities and their responses to inequalities.

Aim 1: Investigate how children's status (Advantaged, Disadvantaged) relates to their perceptions of individual and group based inequalities.

Judgment of the Allocation. To test hypotheses regarding children's judgments of the inequality, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Individual, Group) Univariate ANOVA was conducted with children's Judgment of the Inequality as the dependent variable (see Figure 2). A main effect for Status was found, $F(1,167) = 14.81$, $p < .001$, $\eta_p^2 = .081$; children who were advantaged by the inequality judged it to be more fair than those who were disadvantaged by it. A main effect for Type of Inequality was also found, $F(1,167) = 7.37$, $p = .007$, $\eta_p^2 = .042$; children evaluated individually based inequalities to be more fair than group

based inequalities. A main effect for Age was not found (p = .061). There were also no significant interactions between the variables (all ps > .20).

Thus, our hypotheses were partially supported; children's judgments of the inequalities were related to their status and the type of inequality. Specifically, advantaged children judged the inequalities more positively than did disadvantaged children. Further, individual inequalities were judged more positively than group based inequalities. No differences were found based on participants' age.

Figure 2.

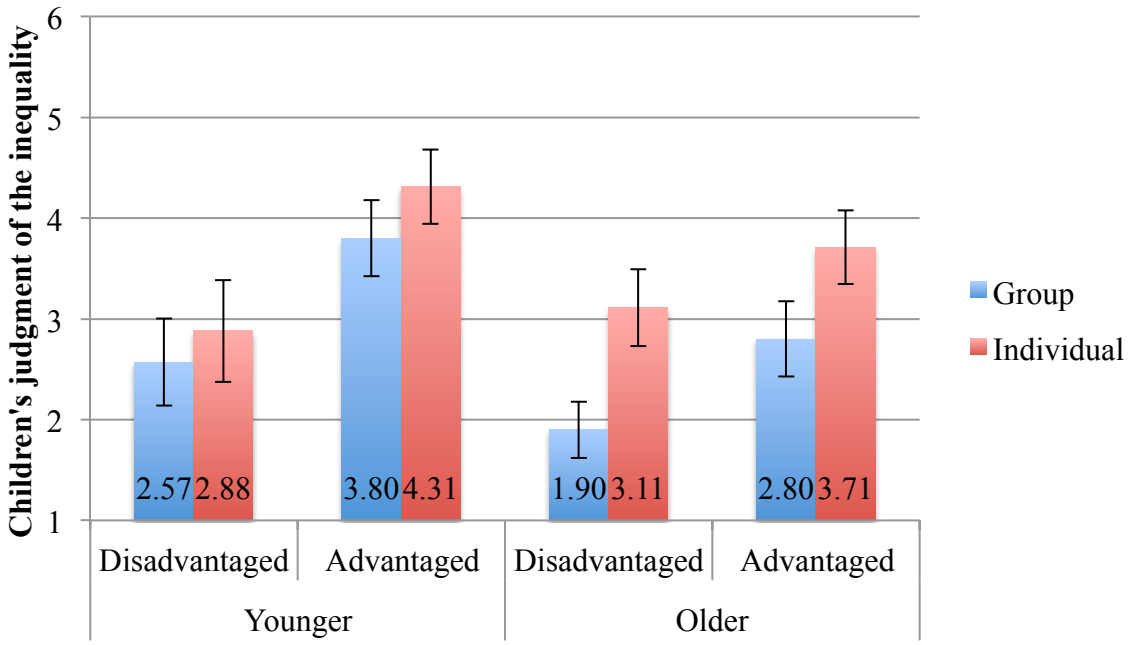


Figure 2. Children's judgment of the inequality by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Not Okay" to 6 = "Really Okay". Bars represent the standard error of the means.

Reasoning for Judgment of Allocation. In order to determine how children's judgment of the inequality was related to their reasoning, children were first split into two groups based on their judgment of the inequality (Not Okay, Okay). Overall, 97 children reported that the inequality was "Not Okay" and 78 children reported that the inequality was "Okay". Initial descriptive analyses revealed that 36% of children referenced Equity, 14% of children referenced Merit, 6% of children referenced Others' Mental States, 27% of children referenced their Own Mental States, and 17% of responses were non-codable. Reasoning categories that were referenced greater than 10% of the time were included in further analyses (Equity, Merit, Own Mental States).

To test hypotheses regarding children's reasoning for their judgments of the inequality, a Judgment (Not Okay, Okay) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Reasoning (Equality, Merit, Own Mental States) ANOVA with repeated measures on the last factor was conducted (see Figure 3). A main effect for Reasoning was found, $F(2,334) = 9.65$, $p < .001$, $\eta_p^2 = .055$; children were more likely to reference Equity ($p < .001$) and their Own Mental States ($p = .005$) than Merit. No difference was found between children's references Equity and their Own Mental States ($p = .62$).

A an interaction between Reasoning by Judgment was also found, $F(2,334) = 21.27$, $p < .001$, $\eta_p^2 = .11$; children who judged the inequality to be "Not Okay" were more likely to reference Equity than were children who judged the inequality to be "Okay" ($p < .001$), whereas children who judged the inequality to be "Okay" were more likely to reference their Own Mental States than were children who judged the inequality to be "Not Okay" ($p < .001$). No difference was found for children's references to Merit

(p = .82). Finally, this interaction was further explained by a Reasoning by Judgment by Status interaction, $F(2,334) = 3.66$, $p = .027$, $\eta_p^2 = .021$; for children who judged the inequality to be "Not Okay", children who were disadvantaged by the inequality were more likely to reference their Own Mental States than were children who were advantaged by the inequality (p = .015).

Thus, our hypotheses were partially confirmed; children's judgment of the inequality and their status were related to their reasoning for their judgments. Children who judged the inequality to be "Not OK" primarily reasoned about Equity, whereas children who judged the inequality to be "OK" primarily reasoned about their Own Mental States. No differences were found based on participants' age and type of inequality.

Figure 3.

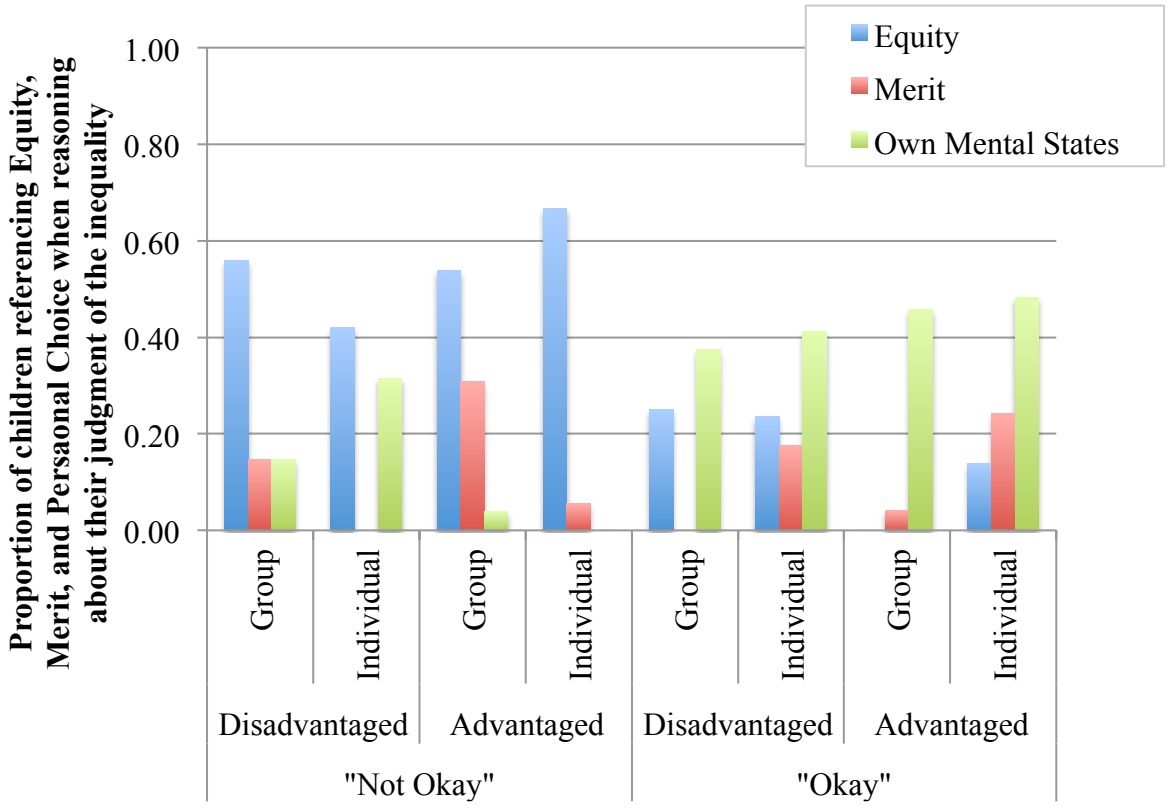


Figure 3. Proportion of children referencing Equity, Merit, and their Own Mental States when reasoning about their judgment of the inequality by Judgment (Not Okay, Okay), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Evaluation of Emotional Reaction to the Allocation. To test hypotheses regarding children's evaluation of their own welfare, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) Univariate ANOVA was conducted with children's Evaluation of Own Welfare as the dependent variable (see Figure 4). A main effect for Status was found, $F(1,165) = 114.79$, $p < .001$, $\eta_p^2 = .41$; children who were advantaged by the inequality reported feeling more positively than did those who were disadvantaged by it. A main effect for Type of Inequality was also found, $F(1,165) = 10.80$, $p = .001$, $\eta_p^2 = .061$; children reported feeling more positively following an individually based inequality than a group based inequality.

These effects were explained by an Age by Status interaction, $F(1,165) = 5.64$, $p = .019$, $\eta_p^2 = .033$; younger children who were advantaged by the inequality reported feeling more positively than did older children who were advantaged by it ($p = .011$), whereas no difference was found for children who were disadvantaged by the inequality. Finally, these effects were further explained by an Age by Status by Type of Inequality interaction, $F(1,165) = 3.99$, $p = .047$, $\eta_p^2 = .024$; younger children reported feeling more positively when they were disadvantaged by an individually based inequality than when they were disadvantaged by a group based inequality ($p = .013$), whereas older children reported feeling more positively when they were advantaged by an individually based

inequality than when they were advantaged by a group based inequality (p = .012). Younger children also reported feeling more positively when they were advantaged by a group based inequality than did older children (p = .002).

Thus, our hypotheses were supported; children's evaluations of their own welfare following an inequality were related to their age, status within the inequality, and the type of inequality. Children who were advantaged by the inequality reported feeling better than children who were disadvantaged by it, but children's positive feelings regarding their advantage decreased with age. Further, children generally reported feeling more positively following individual than group inequalities.

Figure 4.

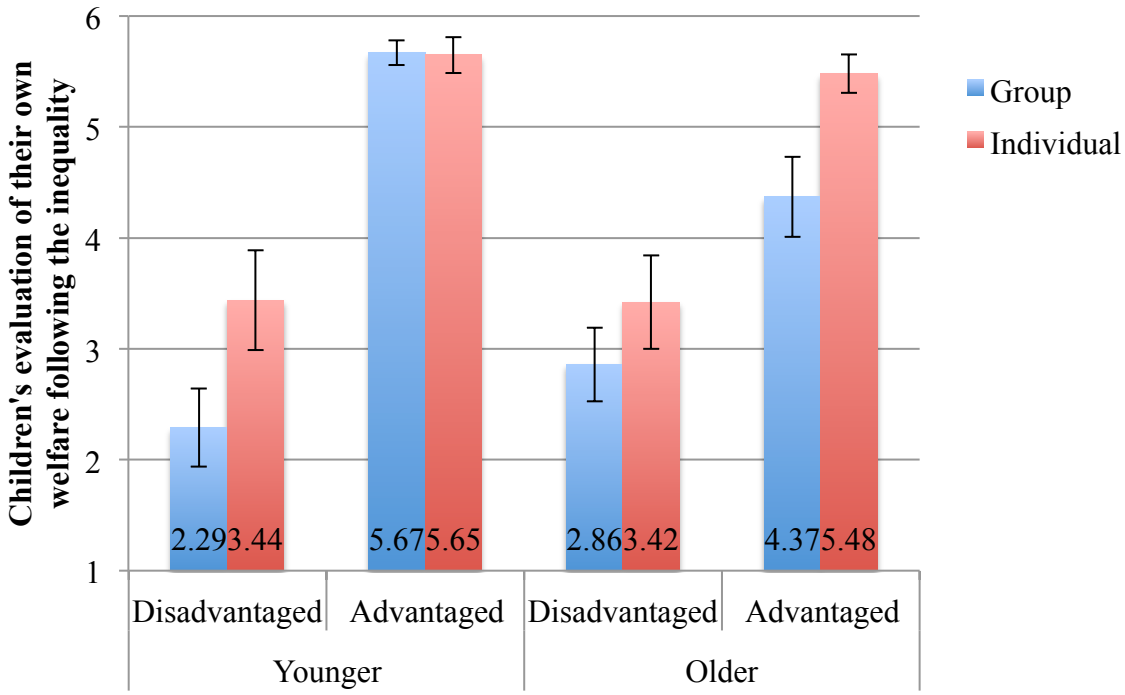


Figure 4. Children's reported welfare following the inequality by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Bad" to 6 = "Really Good". Bars represent the standard error of the means.

Perceptions of Others' Emotional Reaction to the Allocation. To test hypotheses regarding children's perception of their outgroup member's welfare, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) Univariate ANOVA was conducted with children's Perception of Outgroup Member's Welfare as the dependent variable (see Figure 5). A main effect for Status was found, $F(1,166) = 210.81$, $p < .001$, $\eta_p^2 = .56$. Children who were disadvantaged by the inequality expected their *advantaged* outgroup member to feel more positively than children who were advantaged by the inequality expected their *disadvantaged* outgroup member to feel. No other effects or interactions were found (all *p*s > .09).

Thus, our hypotheses were partially supported, children's perceptions of an outgroup member's welfare was related to their status. Children who were advantaged by the inequality reported that their disadvantaged outgroup member would feel worse than children who were disadvantaged by the inequality reported that their advantaged outgroup member would feel. No effects were found for participants' age or the type of inequality.

Figure 5.

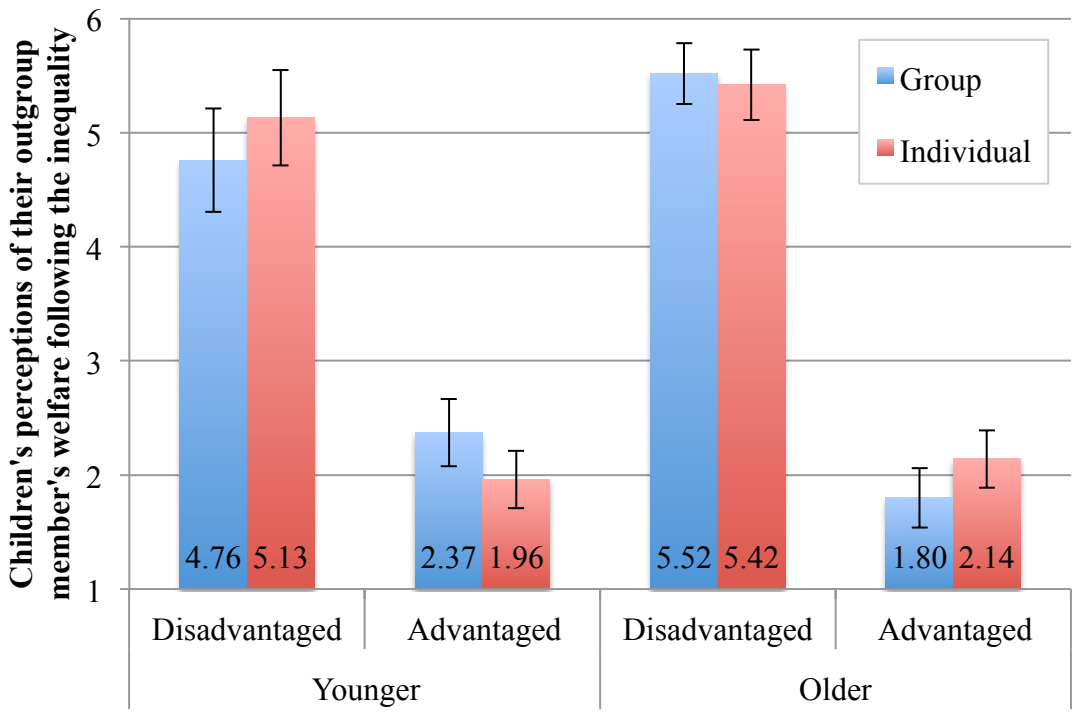


Figure 5. Children's expected outgroup member's welfare following the inequality by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Bad" to 6 = "Really Good". Bars represent the standard error of the means.

Perception of Outgroup Judgment of the Allocation. To test hypotheses regarding children's perception of their outgroup member's judgment of the inequality, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) Univariate ANOVA was conducted with children's Perception of Outgroup Member's Judgment of the Inequality as the dependent variable (see Figure 6). A main effect for Status was found, $F(1,166) = 19.65$, $p < .001$, $\eta_p^2 = .11$. Children who

were disadvantaged by the inequality expected their *advantaged* outgroup member to judge the inequality more positively than children who were advantaged by the inequality expected their *disadvantaged* outgroup member to judge it. No other effects or interactions were found (all *p*s > .09).

Thus, our hypotheses were partially supported; children who were advantaged by the inequality reported that their disadvantaged outgroup member would judge it more negatively than children who were disadvantaged by the inequality reported that their advantaged outgroup member would judge it. No effects were found for participants' age or the type of inequality.

Figure 6.

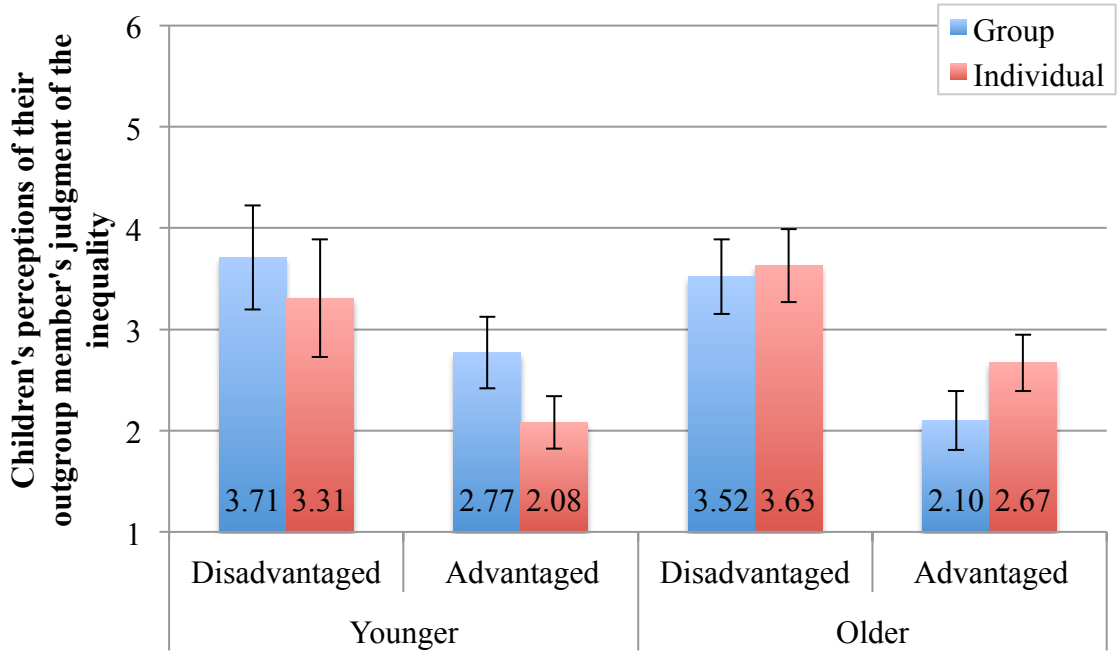


Figure 6. Children's expected outgroup member's judgment of the inequality by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group,

Individual). Scale: 1 = "Really Not Okay" to 6 = "Really Okay". Bars represent the standard error of the means.

Perceptions of Control. To test hypotheses regarding children's perceptions of whether or not there was anything that the disadvantaged characters could have done to get more resources, X^2 tests were conducted to test for effects of Age, Status, and the Type of Inequality (see Figure 7). Counter to our hypotheses, no effects were found for Age (p = .080), Status (p = .82), or Type of Inequality (p = .065). Nor were there any significant interactions (all ps > .12).

Figure 7.

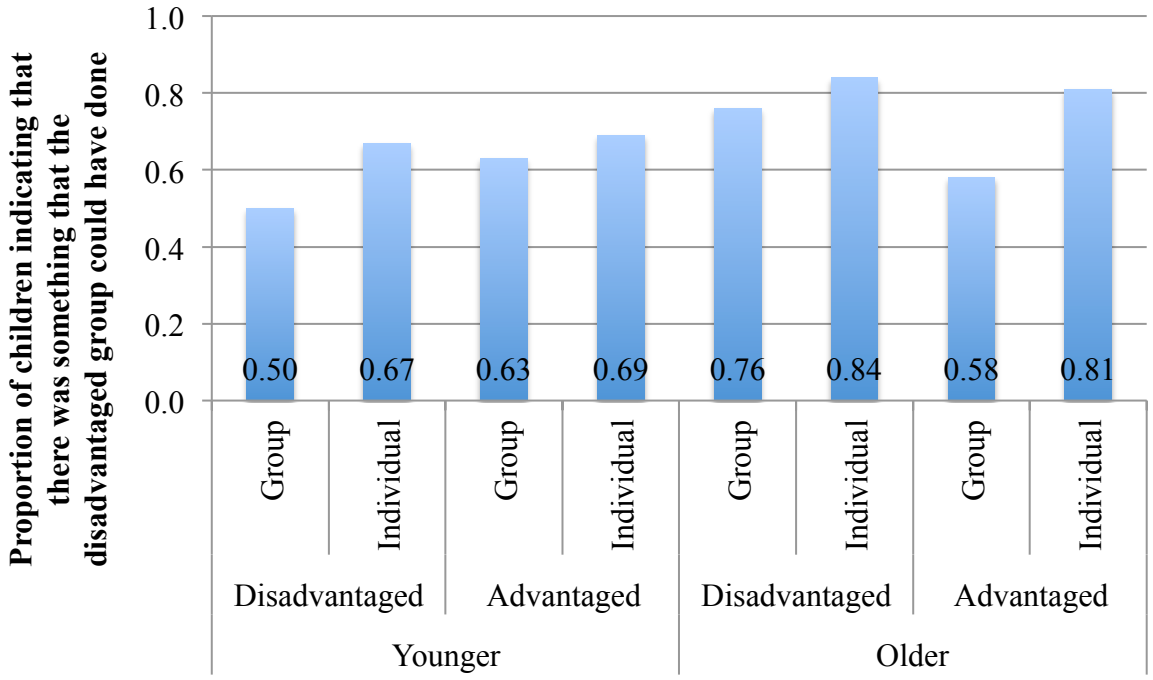


Figure 7. Proportion of children indicating that there was something that the disadvantaged group could have done differently by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Reasoning for Perceptions of Control. Initial descriptive analyses revealed that 12.5% of children referenced Structural Biases, 57% of children referenced Merit, and 11% of participants referenced Protesting the Allocation. To test for differences in children's reasoning for their perceptions of control, participants were split into two groups: children who reported that there was nothing that the disadvantaged group could have done ("No Control"; coded as 0) and children who reported that there was something that the disadvantaged group could have done ("Control"; coded as 1).

To test hypotheses regarding children's reasoning for their perceptions of control, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Perception of Control (No Control, Control) X Reasoning (Structural Biases, Merit, Protest) ANOVA with repeated measures on the last factor was conducted (see Figure 8).

A main effect for Reasoning was found, $F(2,310) = 37.23$, $\eta_p^2 = .19$; children were more likely to reference Merit than Structural Biases ($p < .001$) and Protest ($p < .001$). No differences were found between children's references to Structural Biases and Protest ($p = .12$).

An Age X Reasoning interaction was found, $F(2,310) = 3.00$, $p = .05$, $\eta_p^2 = .019$; with age, children were more likely to reference Structural Biases ($p < .001$). No age differences were found for children's references to Merit ($p = .23$) or Protest ($p = .28$).

A Status X Reasoning interaction was found $F(2,310) = 3.23$, $p = .041$, $\eta_p^2 = .020$; children who were themselves advantaged by the inequality were more likely to reference Merit (saying that the disadvantaged group should have worked harder) than were

children who were disadvantaged by the inequality ($p = .029$). No status differences were found for references to Structural Biases ($p = .17$) or Protest ($p = .44$).

A Type of Inequality X Reasoning interaction was found $F(2,310) = 13.75$, $p < .001$, $\eta_p^2 = .081$; children were more likely to reference Merit in the individual than in the group condition ($p = .001$), whereas they were more likely to reference Structural Biases in the group than in the individual condition ($p < .001$). No difference was found for children's references to Protest ($p = .54$)

A Perception of Control X Reasoning interaction was found $F(2,310) = 28.43$, $p < .001$, $\eta_p^2 = .16$; children who reported that there was nothing that the disadvantaged group could have done were more likely to reference Structural Biases than were children who reported that there was something that the disadvantaged group could have done ($p < .001$). On the other hand, children who did report that there was something that could have been done were more likely to reference Merit compared to those who said there was nothing that could have been done ($p < .001$). Interestingly, there were no differences for children's references to Protest ($p = .13$).

A Type of Inequality X Perception of Control X Reasoning interaction was found, $F(2,310) = 5.26$, $p = .006$, $\eta_p^2 = .033$; in the group condition, children who reported that there was nothing that the disadvantaged group could have done were more likely to reference Structural Biases than were children who reported that there was something that the disadvantaged group could have done ($p < .001$), whereas children who did report that there was something that could have been done were more likely to reference Merit compared to those who said there was nothing that could have been done ($p < .001$). In the individual condition, however, children who reported that there was something that

could have been done were more likely to reference Merit compared to those who said there was nothing that could have been done ($p < .001$), but no differences were found for references to Structural Biases ($p = .36$) or Protest ($p = .51$).

Thus, our hypotheses were supported; children's age, status, the type of inequality, and whether or not the perceived the disadvantaged characters to have control over whether or not the received resources all related to children's reasoning. Overall, children were primarily focused on Merit, particularly when they themselves were advantaged by the inequality, when they were in the individual condition, and when they reported that there was something that could have been done. Importantly, children's references to Structural Biases also increased with age, and were primarily referenced when saying that there was nothing that could have been done in the group condition. Interestingly, participants' references to protesting the inequality remained relatively constant across each of the factors.

Figure 8.

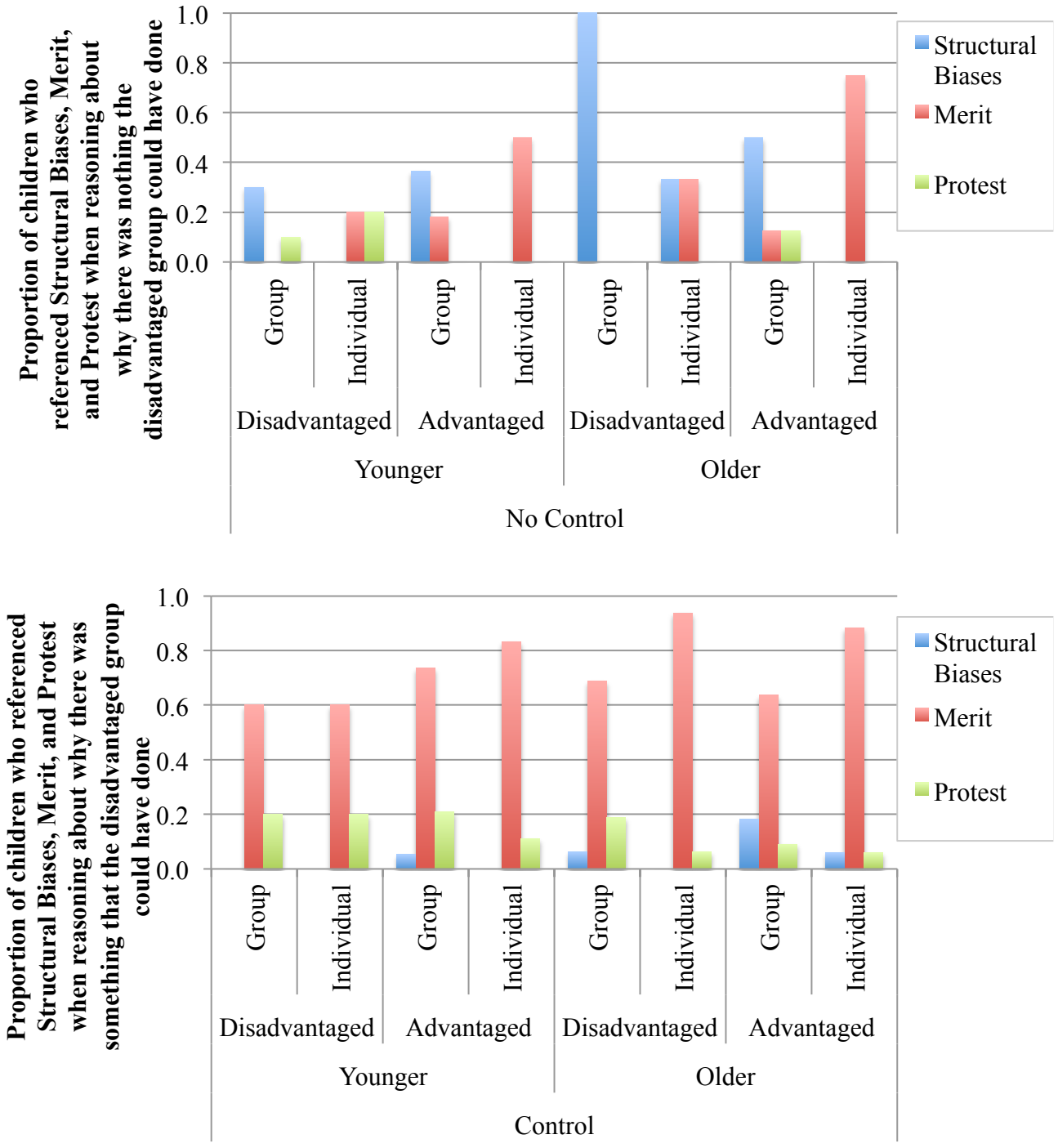


Figure 8. Proportion of children referencing Structural Biases, Merit, and Protesting when reasoning about their perception of control by Perception of Control (Control, No

Control), Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Perceptions of Control Recoded. The Perceptions of Control assessment was designed to capture participant's assessment of whether or not there was anything that the disadvantaged group could have done *in the activity* to receive more resources – determining if children were able to identify the critical difference between the individual and group conditions. To test this assumption, participants Perceptions of Control responses were recoded to better address this question. Specifically, participants who indicated that the disadvantaged group should have protested the allocation – while demonstrating an impressive degree of ingenuity – may have misunderstood the premise of the assessment. Thus, participants who referenced Protest were recoded as saying that there was nothing that the disadvantaged group could have done. Following this recode, analyses revealed a significant effect for Type of Inequality, Likelihood Ratio X^2 (1) = 6.99, p = .008; children were more likely to identify that there was something that could have been done in the individual than in the group condition.

An Age X Type of Inequality interaction was also found, Likelihood Ratio X^2 (1) = 5.41, p = .02; older, but not younger, children were more likely to identify that there was something that could have been done in the individual than in the group condition.

A Status X Type of Inequality interaction was also found, Likelihood Ratio X^2 (1) = 4.34, p = .037; advantaged, but not disadvantaged, children were more likely to identify that there was something that could have been done in the individual than in the group condition.

Thus, by recoding the assessment to fit with the intention of the assessment, our hypotheses were supported; children's age, status, and the type of the inequality all related to whether or not children expected that there was something that the disadvantaged group could have done. Consistent with our hypotheses, children were more likely to say that there was something that the disadvantaged group could have done to get more resources in the individual than in the group condition, and this increased with age and was evident for advantaged, but not disadvantaged, children.

Judgment of Equal Redistribution. To test hypotheses regarding children's judgments of redistributing the resources following an unequal allocation, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Attributions of Redistribution Strategy (Disadvantaged, Unsure, Advantaged) Univariate ANOVA was conducted with children's Judgment of Redistribution as the dependent variable (see Table 6). A main effect for Status was found, $F(1,149) = 23.88$, $p < .001$, $\eta_p^2 = .138$; children who were disadvantaged by the inequality judged redistribution to be more fair than those who were advantaged by it. A main effect for Attribution of Redistribution Strategy was also found, $F(2,149) = 8.64$, $p < .001$, $\eta_p^2 = .10$; children who attributed the redistribution strategy to the disadvantaged character judged redistribution less positively than did those who attributed it to the advantaged character ($p = .005$) and those who were unsure ($p < .001$).

An Age X Type of Inequality interaction was also found, $F(1,149) = 5.61$, $p = .019$, $\eta_p^2 = .036$; older children were more positive than younger children were about redistribution following a group based inequality ($p = .005$), whereas no age differences

were found for judgments of redistributing the resources following an individual inequality ($p = .68$).

An Age X Attribution of Redistribution Strategy interaction was also found, $F(2,149) = 3.83$, $p = .024$, $\eta_p^2 = .049$; older children who attributed the redistribution strategy to the disadvantaged character were more positive about redistribution than were younger children who attributed the redistribution strategy to the disadvantaged character ($p = .036$), whereas no age-related differences were found for children who were unsure ($p = .22$) and children who attributed it to the advantaged character ($p = .11$).

Finally, a Status X Attribution of Redistribution Strategy interaction was found, $F(2,149) = 8.24$, $p < .001$, $\eta_p^2 = .10$. Advantaged children were less positive about redistributing the resources when they attributed it to the disadvantaged character compared to when they were unsure ($p < .001$) and when they attributed it to the advantaged character ($p < .001$). No differences were found for children who were disadvantaged (all ps $> .9$).

Thus, our hypotheses were supported; children's judgment of redistributing resources following an unequal allocation were related to their age, status, the type of inequality, and who they attributed the redistribution strategy to. With age, children recognized the particular importance of redistributing resources following a group based inequality and were more positive about redistribution when they expected the suggestion to come from a disadvantaged character. Further, children who were advantaged by the inequality were more positive about redistributing the resources when they attributed the suggestion to a fellow advantaged peer – or were unsure – than when they attributed the suggestion to a disadvantaged character.

Table 6. Means and standard deviations for children's judgment of redistributing resources by Attributions of Redistribution Strategy (Advantaged, Disadvantaged, Unsure), Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Individual, Group).

			Attributions of Redistribution Strategy					
			Disadvantaged		**Unsure**		**Advantaged**	
Age	**Status**	**Type of Inequality**	***M***	**(SD)**	***M***	**(SD)**	***M***	**(SD)**
Younger	Disadvantaged	Group	5.20	(1.69)	5.75	(0.71)	5.00	(1.28)
		Individual	6.00	(0.00)	6.00	(0.00)	6.00	(0.00)
	Advantaged	Group	1.00	(0.00)	5.60	(1.06)	4.50	(2.11)
		Individual	3.71	(1.80)	5.60	(1.27)	4.89	(1.76)
Older	Disadvantaged	Group	6.00	(0.00)	5.73	(0.65)	5.80	(0.45)
		Individual	5.71	(0.49)	6.00	(0.00)	5.50	(1.00)
	Advantaged	Group	4.33	(2.08)	5.08	(1.85)	6.00	(0.00)
		Individual	3.63	(1.92)	4.57	(2.44)	6.00	(0.00)

Reasoning for Judgment of Equal Redistribution. Initial descriptive analyses revealed that 61% of children referenced Equity, 7% of children referenced Merit, 10% of children referenced Others' Mental States, 10% of children referenced their Own Mental States, and 12.5% of children's responses were non-codable. Reasoning

categories that were referenced greater than 10% of the time were included in further analyses (Equity, Others' Mental states, Own Mental States).

To test hypotheses regarding children's reasoning for their judgments of redistributing the resources following an inequality, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Reasoning (Equity, Others' Mental states, Own Mental States) ANOVA with repeated measures on the last factor was conducted (see Figure 9). A main effect for Reasoning was found, $F(2,336) = 88.80$, $p < .001$, $\eta_p^2 = .346$; children were more likely to reference Equity than Others' Mental States ($p < .001$) and their Own Mental States ($p < .001$). No difference was found between Others' Mental states and their Own Mental States ($p > .9$). A Status X Reasoning interaction was also found, $F(2,336) = 5.88$, $p = .003$, $\eta_p^2 = .034$; disadvantaged children were more likely to reference Equity than were advantaged children ($p = .003$), whereas no difference was found for children's references to Others' Mental states ($p = .15$) or their Own Mental States ($p = .51$).

Figure 9.

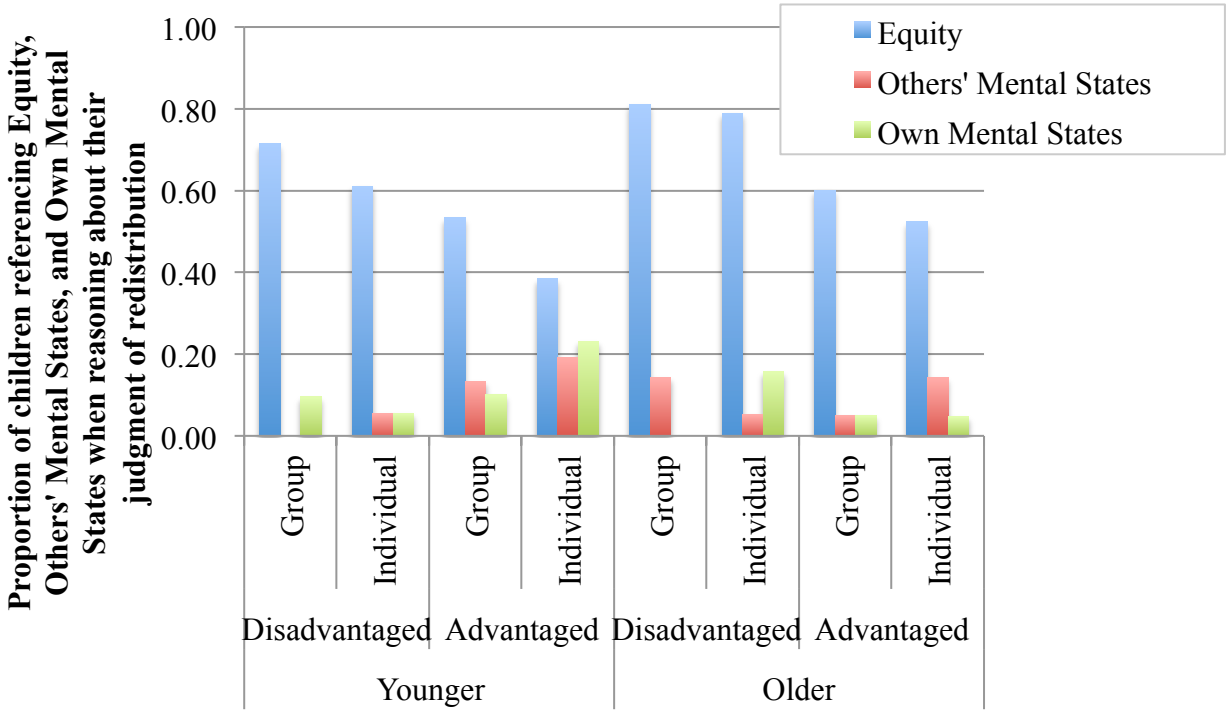


Figure 9. Proportion of children referencing Equity, Others' Mental States, and their Own Mental States when reasoning about their judgment of redistribution by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Expectations Regarding the Identity of the Redistributor. Initial analyses were conducted to determine whom children expected to be the advocate for redistributing the resources: the disadvantaged peer or the advantaged peer (see Figure 10). X^2 tests revealed a main effect for Status, Likelihood Ratio X^2 (2) = 6.47, p = 0.039; children who were disadvantaged by the inequality were more likely to expect that the disadvantaged peer suggested redistributing the resources, whereas children who were advantaged by

the inequality were more likely to expect that the advantaged peer suggested redistributing the resources.

An Age X Status interaction was also found, Likelihood Ratio X^2 (2) = 9.64, p = .008; for younger children, those who were *disadvantaged* by the inequality were more likely to report that the disadvantaged were more likely to expect that the disadvantaged peer suggested redistributing the resources, whereas children who were advantaged by the inequality were more likely to expect that the advantaged peer suggested redistributing the resources. Older children, however, did not differ in their expectations based on their own status.

Finally, a Status X Type of Inequality interaction was also found, Likelihood Ratio X^2 (2) = 7.68, p = .021; for children who were *advantaged* by the inequality, those who were advantaged by a *group based* inequality were less likely report that the disadvantaged peer suggested redistributing the resources, whereas those who were advantaged by an *individual* inequality were more likely to report that the disadvantaged peer suggested redistributing the resources. No differences were found for children who were disadvantaged by the inequality.

Thus, overall, our hypotheses were confirmed; children's own status was related to whom they expected to advocate for redistributing the resources. Younger, but not older, children expected their status ingroup member to advocate for redistribution. Further, children who were advantaged by a group based inequality were less likely to attribute this to the disadvantaged peer, whereas children who were advantaged by an individual inequality were more likely to attribute this to the disadvantaged peer.

Figure 10.

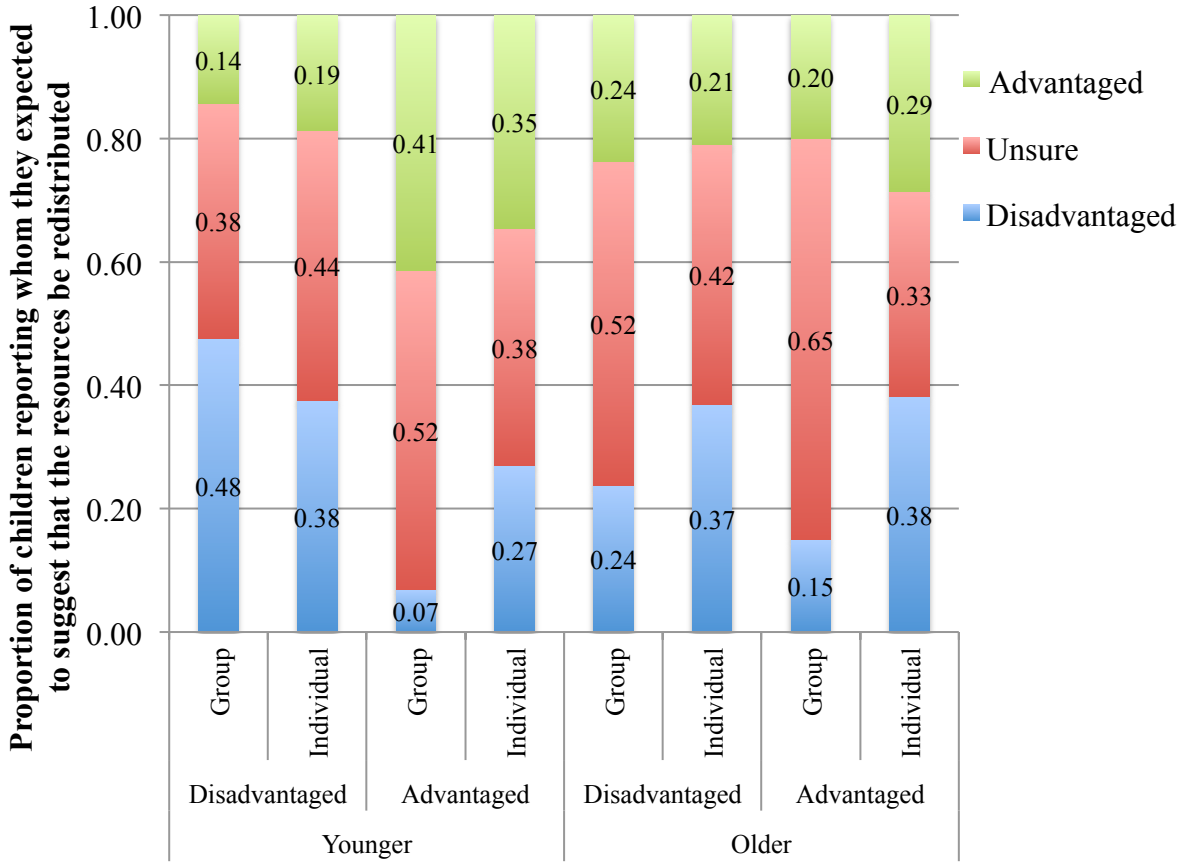


Figure 10. Proportion of children reporting whom the expected to suggest that the resources be redistributed by Age (Younger, Older), Status (Advantaged, Disadvantaged), Type of Inequality (Group, Individual).

Judgments of Perpetuating, Rectifying, and Equal Allocations. To test hypotheses regarding children's judgments of the three allocation strategies (Perpetuating, Rectifying, Equal), an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Allocation Strategy (Perpetuating, Rectifying, Equal) ANOVA was conducted with repeated measures on the

last factor (see Figure 11). A main effect for Allocation Strategy was found, $F(2,330) = 42.82$, $p < .001$, $\eta_p^2 = .21$; children evaluated equal allocations more positively than perpetuating ($p < .001$) and rectifying ($p = .05$) allocations, and evaluated rectifying allocations more positively than perpetuating ($p < .001$).

An Age X Allocation Strategy interaction was also found, $F(2,330) = 3.69$, $p = .026$, $\eta_p^2 = .022$; children judged the perpetuating allocation more negatively with age ($p = .004$), but did not differ in their judgments of the rectifying ($p = .44$) and equal allocation ($p = .77$). A Status X Allocation Strategy interaction was also found, $F(2,330) = 23.09$, $p < .001$, $\eta_p^2 = .12$. Disadvantaged children judged the rectifying ($p < .001$) and equal ($p < .001$) allocations more positively than perpetuating allocations, and did not differ between the rectifying and equal allocations ($p > .9$). Advantaged children, on the other hand, judged the equal allocation more positively than the rectifying ($p < .001$) and perpetuating ($p < .001$) allocations, and did not differ between the rectifying and perpetuating allocations ($p > .9$).

Finally, a Status X Type of Inequality X Allocation Strategy interaction was also found, $F(2,330) = 4.08$, $p = .018$, $\eta_p^2 = .024$. In the group condition, children who were disadvantaged by the inequality judged rectifying ($p < .001$) and equal ($p < .001$) allocations more positively than perpetuating allocations, and did not differ in their judgments of equal and rectifying allocations ($p > .9$), whereas children who were advantaged by the group based inequality did not differ in their judgments of the allocations (all ps $> .69$). In the Individual condition, by contrast, children who were disadvantaged by the inequality judged rectifying ($p < .001$) and equal ($p < .001$) allocations more positively than perpetuating allocations, and did not differ in their

judgments of equal and rectifying allocations ($p > .9$), whereas children who were advantaged by the individual inequality judged equal allocations to be more positive than rectifying ($p < .001$) and perpetuating ($p < .001$) allocations, and did not differ in their judgments of rectifying and perpetuating allocations ($p > .9$).

Thus, our hypotheses were supported; children's judgments of perpetuating, rectifying, and equal allocations were related to their age, status within the inequality, and the type of inequality. Children were generally more positive about equal than rectifying and perpetuating allocations, and were generally more positive about rectifying than perpetuating allocations. With age, children also became less positive about perpetuating allocations. Further, disadvantaged children did not differ in their judgments of equal and rectifying allocations – judging both more positively than perpetuating allocations – whereas advantaged children favored equal allocations, judging them more positively than both rectifying and perpetuating allocations. Finally, in a group based inequality context, disadvantaged children favored rectifying and equal allocations over perpetuating allocations, while advantaged children were relatively neutral on their judgments of all three allocations. In the individual inequality context, however, while disadvantaged children remained consistent in their positive judgments of rectifying and equal allocations, advantaged children reported an increased judgment for equal allocations over rectifying and perpetuating allocations.

Figure 11.

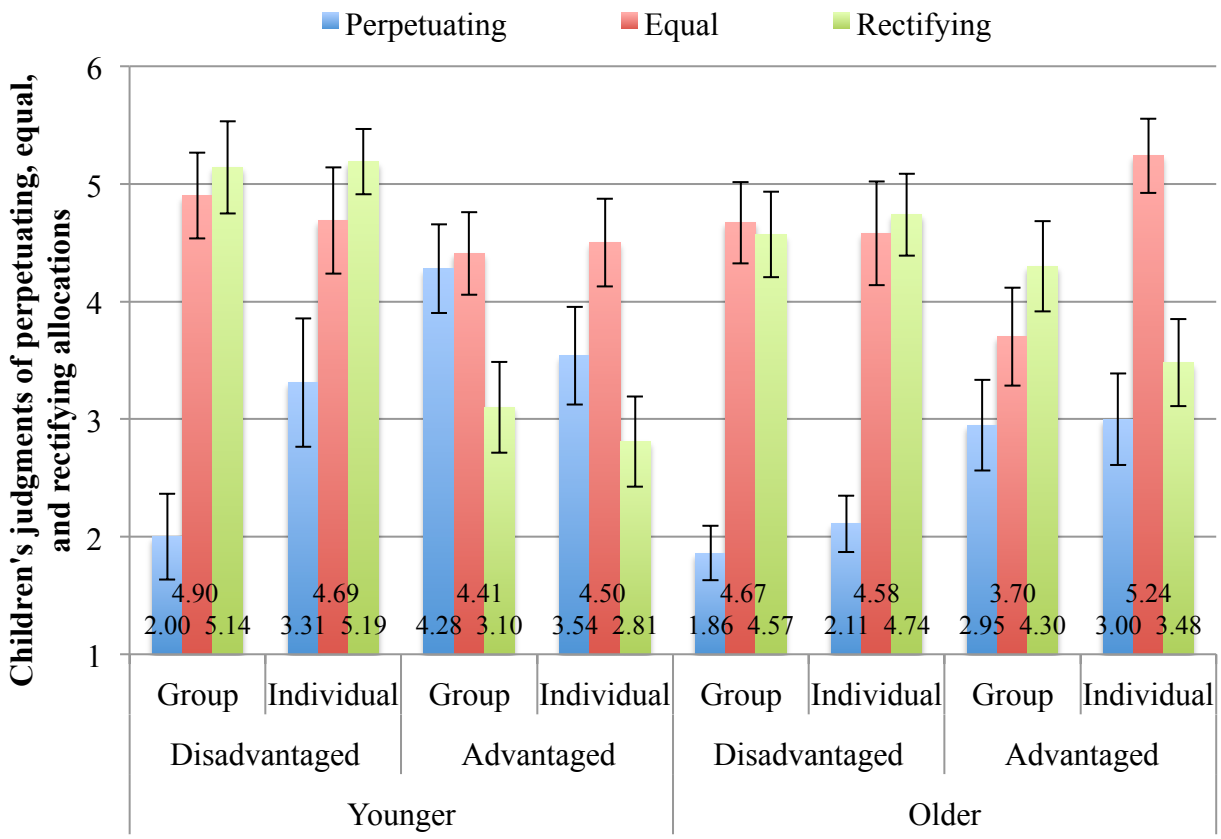


Figure 11. Children's judgment of the Perpetuating, Equal, and Rectifying allocations by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Not Okay" to 6 = "Really Okay". Bars represent the standard error of the means.

Own Allocation. To test hypotheses regarding children's own allocations of resources, X^2 tests were conducted to determine differences in children's chosen allocation strategy (see Figure 12). Results revealed a significant effect for Age, Likelihood Ratio X^2 (2) = 15.58, $p < .001$; younger children were more likely than older children to choose the perpetuation strategy, whereas older children were more likely than younger children to choose the equal strategy. A main effect was also found for

Status, Likelihood Ratio X^2 (2) = 50.22, $p < .001$; advantaged children were more likely than disadvantaged children to chose the perpetuation strategy, whereas disadvantaged children were more likely than advantaged children to chose the rectify strategy. No effect was found for Type of Inequality ($p = .063$).

An Age X Status interaction was also found, Likelihood Ratio X^2 (2) = 12.09, $p = .02$; for children who were advantaged by the inequality, younger children were more likely than older children to choose the perpetuation strategy, whereas older children were more likely than younger children to choose the equal strategy. No differences were found, however, for children who were disadvantaged by the inequality.

An Age X Type of Inequality interaction was also found, Likelihood Ratio X^2 (2) = 12.36, $p = .002$; for children in the individual condition, younger children were more likely than older children to choose the perpetuation strategy, whereas older children were more likely than younger children to choose the equal strategy. No differences were found, however, for children in the group condition.

Finally, a Status X Type of Inequality interaction was also found, Likelihood Ratio X^2 (2) = 7.94, $p = .019$; for children who were advantaged by the inequality, children in the group condition were more likely to choose the rectify strategy then were children in the individual condition, whereas children in the individual condition were more likely to choose the perpetuate strategy than were children in the group condition. No differences were found, however, for children who were disadvantaged by the inequality.

Thus, our hypotheses were supported; children's resource allocation decisions in response to an inequality were related to their age, status within the inequality, and the

type of inequality. With age, children were less likely to choose the perpetuating allocation strategy and were more likely to choose the equal allocation option. Children who were advantaged by the allocation were also more likely to choose to perpetuate it, whereas those who were disadvantaged were more likely to choose to rectify it. Importantly, interactions between the variables were also found. With age, advantaged children were more likely to favor the equal – rather than perpetuating – allocation strategy, and similar age-related findings were found for children in the individual conditions, though no age-related effects were found for disadvantaged children or those in the group condition. Finally, advantaged children were more likely to choose to rectify a group based inequality than an individual one, whereas they were more likely to choose to perpetuate an individual inequality than a group one.

Figure 12.

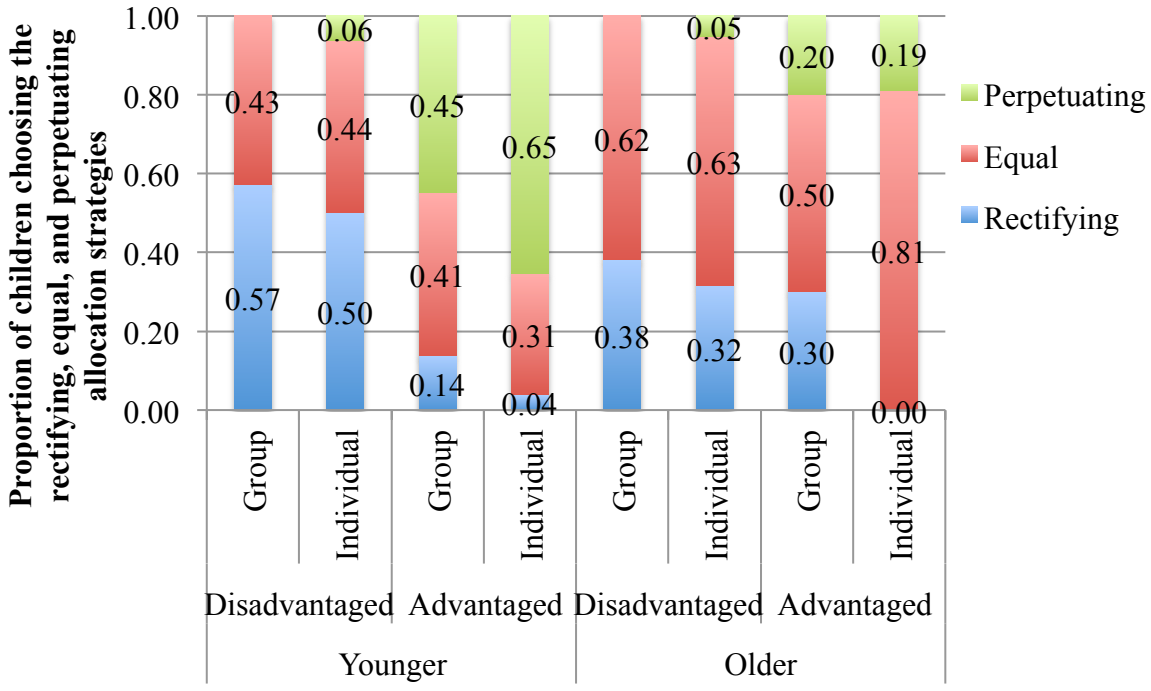


Figure 12. Proportion of children choosing the Perpetuating, Equal, and Rectifying allocations by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Reasoning for Own Allocation. Initial descriptive analyses revealed that 52% of children referenced Equity, 7% of children referenced Merit, 10% of children referenced Others' Mental states, 20% of children referenced their Own Mental States, and 11% of responses were non-codable. Reasoning categories that were referenced greater than 10% of the time were included in further analyses (Equity, Merit, Own Mental States).

To test hypotheses regarding children's reasoning for their resource allocation decisions, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Allocation Strategy (Rectify, Equal, Perpetuate) X Reasoning (Equity, Merit, Own Mental States) ANOVA with repeated measures on the last factor was conducted (see Figure 13). A main effect for Reasoning was found, $F(2,304) = 9.83$, $p < .001$, $\eta_p^2 = .061$; children were more likely to reference Equity than Merit ($p < .001$) and their Own Mental States ($p < .001$). No difference was found between Merit and their Own Mental States ($p > .9$).

An Age X Reasoning interaction was also found, $F(2,304) = 4.58$, $p = .011$, $\eta_p^2 = .029$; younger children were more likely to reference Equity than Merit ($p = .04$), but did not differ in their references to Equity and their Own Mental States ($p > .9$) or Merit and their Own Mental States ($p = .79$). Older children, on the other hand, were more likely to reference Equity than Merit ($p < .001$) and their Own Mental States ($p < .001$), but did not differ in their references to Merit and their Own Mental States.

A Type of Inequality X Reasoning interaction was also found, $F(2,304) = 6.39$, $p = .002$, $\eta_p^2 = .04$; children were more likely to reference Equity in the group than individual condition ($p = .001$), whereas children were more likely to reference Merit in the individual than group condition ($p < .001$), and were equally likely to reference their Own Mental States in the group and individual conditions ($p = .89$).

An Allocation Strategy X Reasoning interaction was also found, $F(4,304) = 7.16$, $p < .001$, $\eta_p^2 = .086$; children were more likely to reference Equity if they chose to rectify ($p = .002$) or allocate resources equally ($p < .001$) than if they chose to perpetuate, and were equally likely to reference Equity if they rectified or allocated equally ($p > .9$). Children were more likely to reference Merit if they chose to perpetuate the inequality than if they chose to rectify ($p = .046$) or allocate equally ($p < .001$), and were more likely to reference Merit if they chose to rectify than if they chose to allocate equally ($p = .002$). No differences were found for children's references to their Own Mental States (all ps $> .48$).

Finally, a marginal Age X Type of Inequality X Reasoning interaction was found, $F(2,304) = 2.79$, $p = .063$, $\eta_p^2 = .018$. Although the interaction was not significant, post-hoc tests were conducted to test hypothesized effects regarding younger children's early reliance on their Own Mental States and older children's increasing concern for Merit. Post-hoc tests indeed revealed that, in the individual condition, although younger children did not differ in their references to Equity, Merit, and their Own Mental States (all ps $> .9$), older children in the individual condition did differ, being more likely to reference either Equity ($p = .045$) or Merit ($p = .044$) than their Own Mental States. No difference was found between older children's references to Equity or Merit ($p = .97$). Interestingly,

in the group condition both younger and older children were more likely to reference Equity than Merit (ps < .001) and their Own Mental States (ps < .02). Neither younger or older children differed in their references to Merit and their Own Mental States (ps > .11) in the group condition.

Thus, our hypotheses were partially supported; children's reasoning for their allocation strategies was related to their age, the type of inequality, and their own allocation decision. Overall children were more likely to reference Equity than Merit or their Own Mental States, and this pattern increased with age and was particularly evident when children rectified or allocated equally. Yet, children's references to Merit were also pronounced at times, notably when justifying their decision to perpetuate the inequality and, with age, in the individual condition. Overall, children's references to their Own Mental States constituted a consistent minority of children's responses. Notably, however, children's own Status did not have a significant impact on their verbal reasoning for their allocation.

Figure 13.

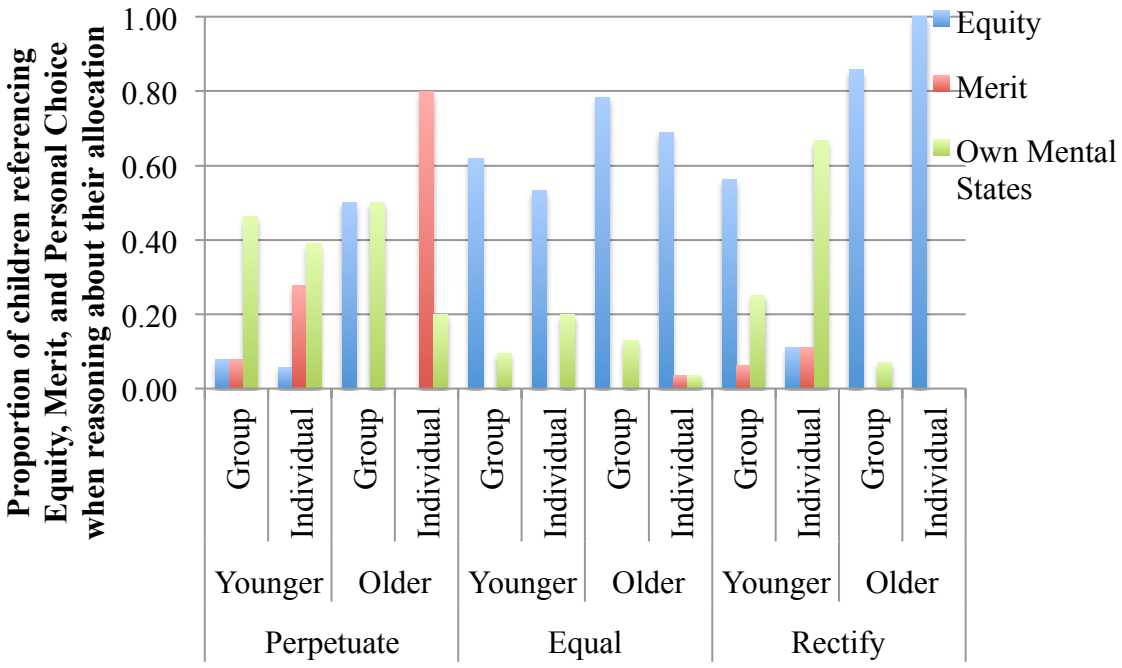


Figure 13. Proportion of children referencing Equity, Merit, and Own Mental States when reasoning about their Allocation by Allocation Strategy (Perpetuate, Equal, Rectify), Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Aim 2: Determine how different resource allocation contexts influence children's intra- and intergroup attitudes, with age.

Ingroup/Outgroup Favorability. To test hypotheses regarding children's favorability towards their ingroup and outgroup members, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Group (Ingroup, Outgroup) ANOVA was conducted with repeated measures on the last factor

(see Figure 14). A main effect for Group was found, $F(1,165) = 63.84$, $p < .001$, $\eta_p^2 = .28$; children were more favorable towards their ingroup member than they were towards their outgroup member.

Thus, our hypotheses were partially supported; children were more favorable towards their ingroup than their outgroup members. No effects were found for children's age, status, or the type of inequality.

Figure 14.

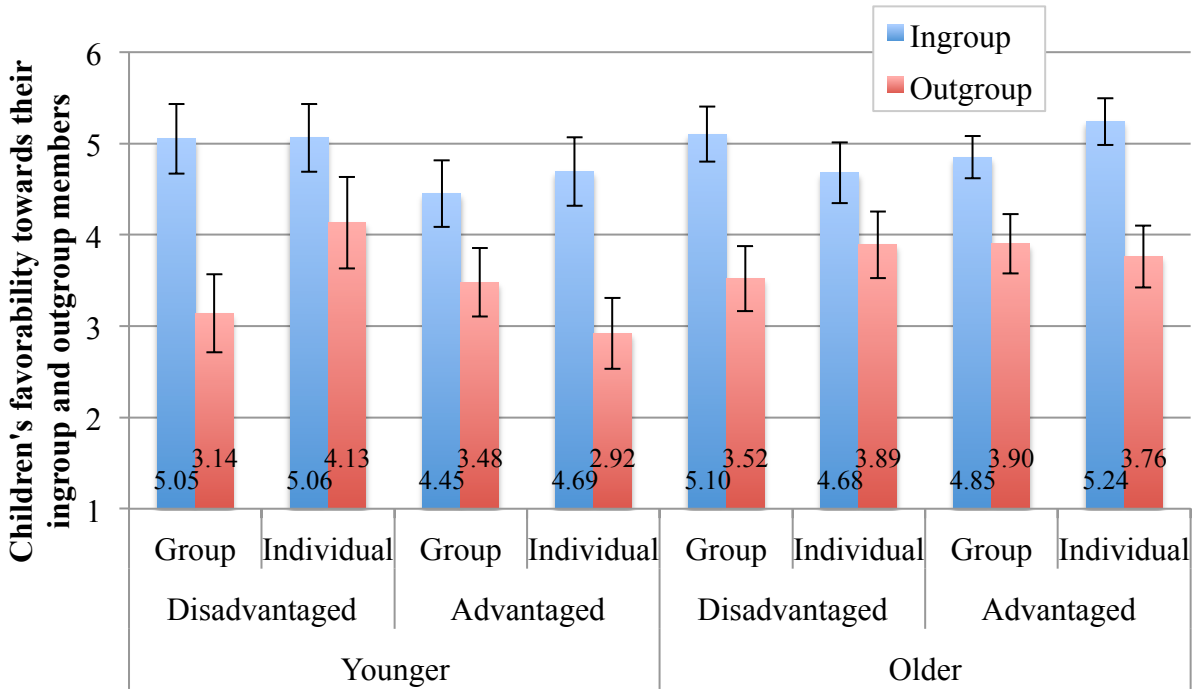


Figure 14. Children's reported favorability towards ingroup and outgroup members by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Bad" to 6 = "Really Good". Bars represent the standard error of the means.

Attribution of Ingroup/Outgroup Members' Abilities. To test hypotheses regarding children's attributions of abilities towards their ingroup and outgroup members, an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Group (Ingroup, Outgroup) ANOVA was conducted with repeated measures on the last factor (see Figure 15). A main effect for Group was found, $F(1,163) = 54.72$, $p < .001$, $\eta_p^2 = .25$; children attributed higher levels of ability to their ingroup than to their outgroup member.

An Age X Group interaction was also found, $F(1,163) = 7.61$, $p = .006$, $\eta_p^2 = .045$; with age, children attributed higher levels of ability to their outgroup members ($p < .001$). No differences, however, were found for children's attributions of abilities to their ingroup members ($p = .68$).

A Status X Group interaction was also found, $F(1,163) = 15.04$, $p < .001$, $\eta_p^2 = .084$; children who were disadvantaged by the inequality attributed higher levels of ability to their advantaged outgroup member than children who were advantaged by the inequality attributed to their disadvantaged outgroup member ($p < .001$). Interestingly, however, advantaged children attributed the same level of ability to their advantaged ingroup member as disadvantaged children attributed to their disadvantaged ingroup member ($p = .80$).

A Status X Type of Inequality X Group interaction was also found, $F(1,163) = 16.77$, $p < .001$, $\eta_p^2 = .093$. Children who were advantaged by the inequality attributed higher levels of ability to their disadvantaged outgroup members in the group than in the individual condition ($p = .018$). Interestingly, no differences were found for advantaged children's attributions of abilities towards their ingroup members ($p = .095$), or for

disadvantaged children's attributions to ingroup (p = .16) or outgroup (p = .060) members.

Thus, our hypotheses were supported; children's age, status, and the type of inequality related to their attributions of abilities to ingroup and outgroup members. Children were generally positive regarding their ingroup member's abilities (even those who were disadvantaged by an individual inequality). Children attributed higher levels of ability to outgroup members with age, and when the outgroup member demonstrated their proficiency by performing well at the task.

Figure 15.

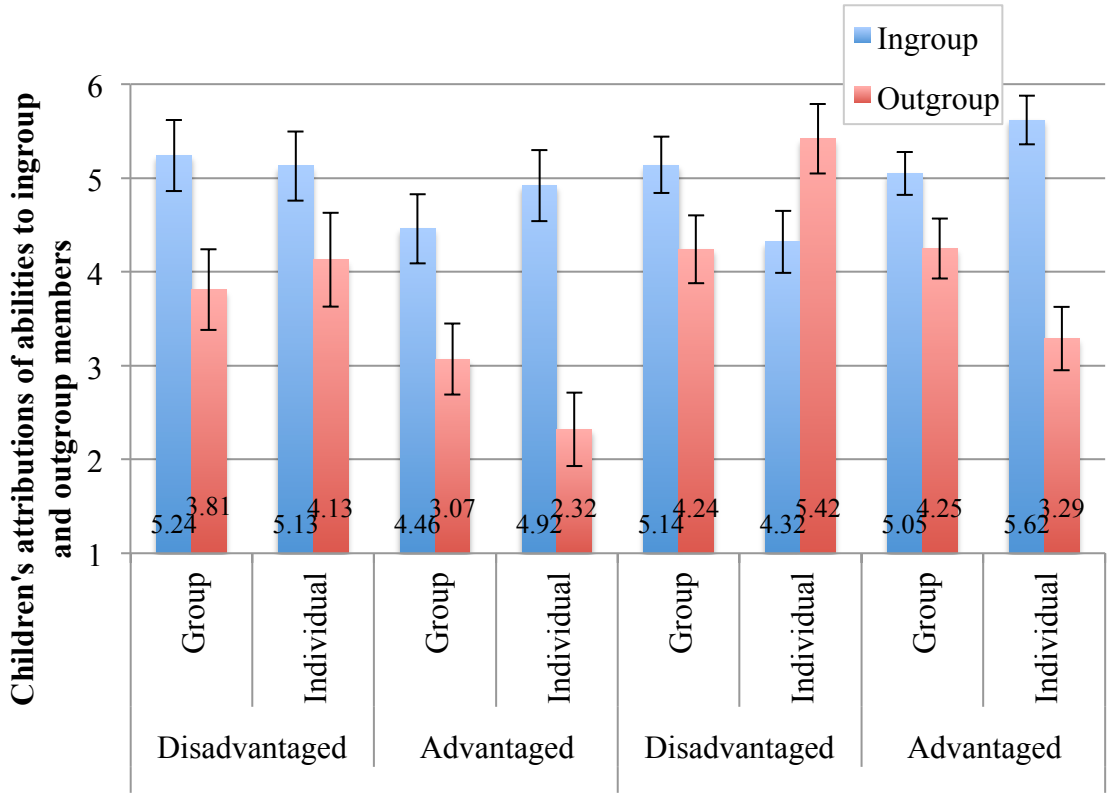


Figure 15. Children's expectations of ability for ingroup and outgroup members by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group,

Individual). Scale: 1 = “Really Bad” to 6 = “Really Good”. Bars represent the standard error of the means.

Inclusion Decision. To test hypotheses regarding children’s inclusion decisions, a generalized linear model was conducted with children’s inclusion decision as the dependent variable and Age, Status, and Type of Inequality as the predictor variables (see Figure 16). The overall model was significant Likelihood Ratio X^2 (7) = 21.88, p = .003. An Age X Status interaction was found, Wald X^2 (1) = 5.85, p = .016, as well as a Status X Type of Inequality interaction, Wald X^2 (1) = 5.67, p = .017. These interactions were further explained by an Age X Status X Type of Inequality interaction, Wald X^2 (1) = 4.26, p = .039. Children who were disadvantaged by an individual inequality were more likely to include their outgroup member with age (p < .001). Age related changes were not found, however, for children who were advantaged by the individual inequality, disadvantaged by a group based inequality, or advantaged by a group based inequality (all ps > .34).

Figure 16.

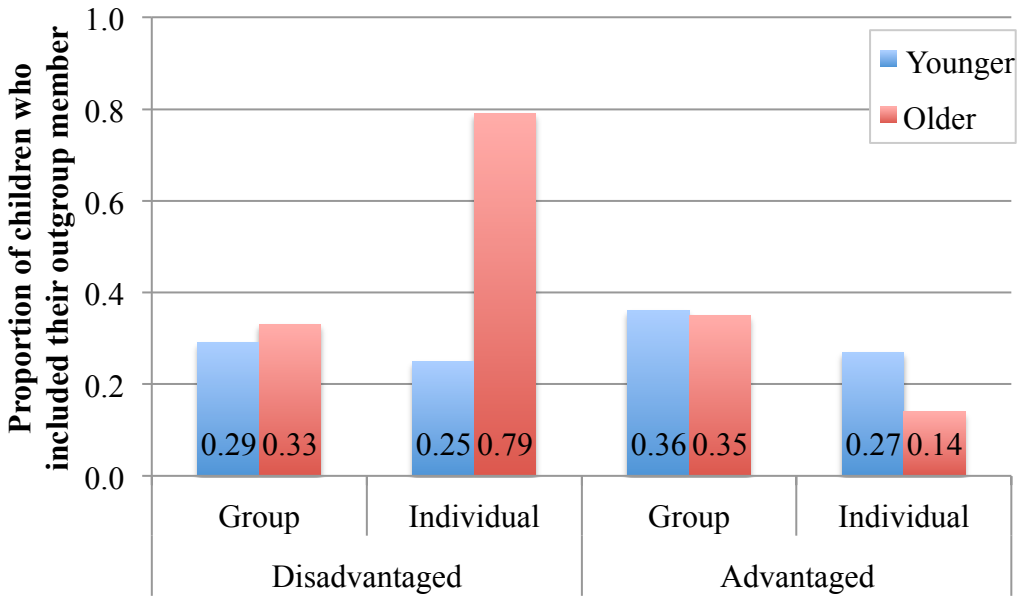


Figure 16. Proportion of children choosing to include their outgroup member.

Reasoning for Inclusion Decision. In order to determine how children's inclusion decisions related to their reasoning, children were first split into two groups based on whom they decided to include (Ingroup, Outgroup). Overall, 113 children chose to include their ingroup member and 59 children chose to include their outgroup member. Initial descriptive analyses revealed that 23% of children referenced Group Membership, 24% of children referenced Ability, 17% of children referenced Benefits of Diversity, 22% of children referenced Personal Concerns and Relationships, and 14% of responses were non-codable. Reasoning categories that were referenced greater than 10% of the time were included in further analyses (Group Membership, Ability, Benefits of Diversity, and Personal Concerns and Relationships).

To test hypotheses regarding children's reasoning for their inclusion decisions, an Inclusion Decision (Ingroup, Outgroup) X Status (Advantaged, Disadvantaged) X Type

of Inequality (Group, Individual) X Reasoning (Group Membership, Ability, Benefits of Diversity, and Personal Concerns and Relationships) ANOVA with repeated measures on the last factor was conducted (see Figure 17). An Inclusion Decision by Reasoning interaction was found, $F(3,492) = 23.35$, $p < .001$, $\eta_p^2 = .13$; children were more likely to reference Group Membership when including an ingroup than an outgroup member ($p < .001$), and were more likely to reference the Benefits of Diversity when including an outgroup than an ingroup member ($p < .001$). References to Ability and Personal Concerns and Relationships did not differ as a factor of children's inclusion decision (ps > .19).

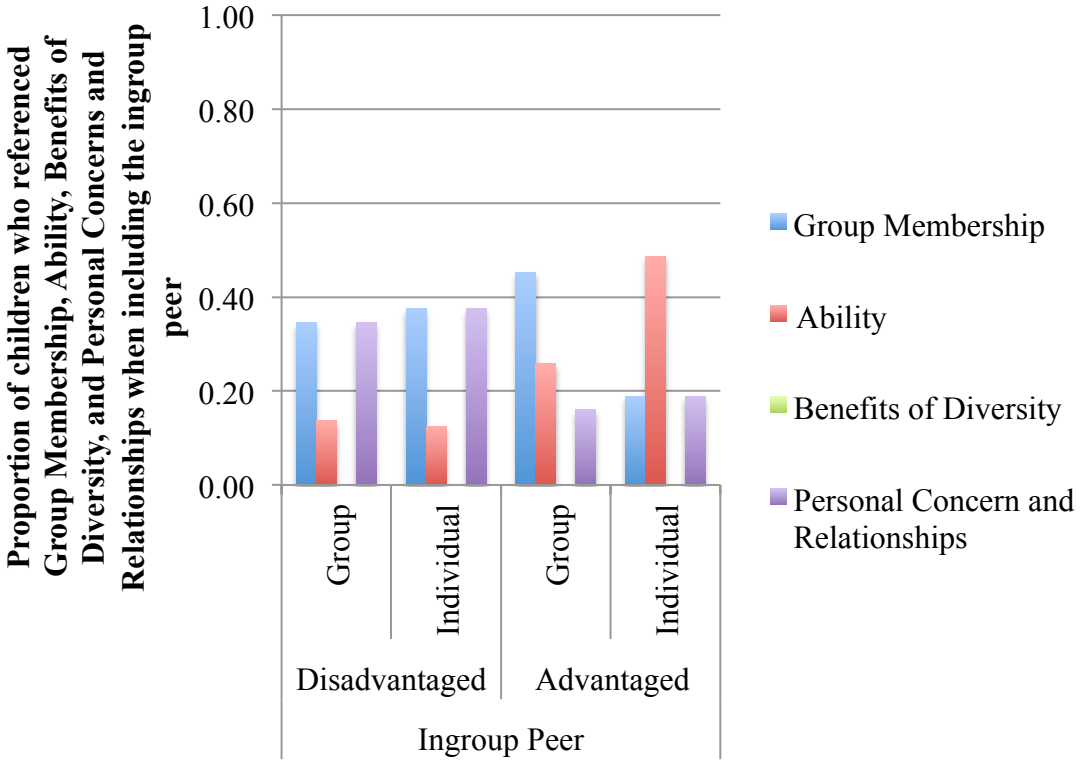
A Type of Inequality by Reasoning interaction was also found, $F(3,492) = 2.65$, $p = .048$, $\eta_p^2 = .016$; children were more likely to reference Ability in the individual than group condition ($p = .02$). No differences were found, however, for the other reasoning categories (all ps > .11).

Finally, an Inclusion Decision by Status by Reasoning interaction was found, $F(3,492) = 3.19$, $p = .023$, $\eta_p^2 = .019$; for children who were disadvantaged, those who chose to include their ingroup peer were more likely to reference Group Membership ($p = .001$) and Personal Concerns and Relationships ($p = .021$) compared to those who chose to include their outgroup peer, whereas children who chose to include their outgroup peer were more likely to reference the Benefits of Diversity ($p < .001$) compared to those who chose to include their ingroup peer. No differences were found for disadvantaged children's references to Ability. Interestingly, for children who were advantaged by the inequality, children who included their ingroup peer were more likely to reference both Group Membership ($p = .006$) and Ability ($p = .013$) than were those who included their

outgroup peer, whereas children who included their outgroup peer were more likely to reference the Benefits of Diversity ($p < .001$).

Thus, our hypotheses were supported; children's inclusion decision, status, and the type of inequality were all related to how children reasoned about their inclusion decision. Overall, children were more likely to reference Ability in the individual than group condition. Interestingly, children's status also played a major role in whom they decided to include; children who were disadvantaged focused on Group Membership and Personal Concerns and Relationships when including an ingroup member, but focused more on the Benefits of Diversity when including an outgroup member – these children did not reference Ability as a major concern when deciding whom to include. By contrast, children who were advantaged focused on Group Membership and Ability when including their ingroup member, but reasoned about the Benefits of Diversity when including an outgroup member.

Figure 17.


Proportion of children who referenced Group Membership, Ability, Benefits of Diversity, and Personal Concerns and Relationships when including the ingroup peer
1.00
0.80
0.60
0.40
0.20
0.00
Group
Individual
Group
Individual
Disadvantaged
Advantaged
Ingroup Peer
Group Membership
Ability
Benefits of Diversity
Personal Concern and Relationships

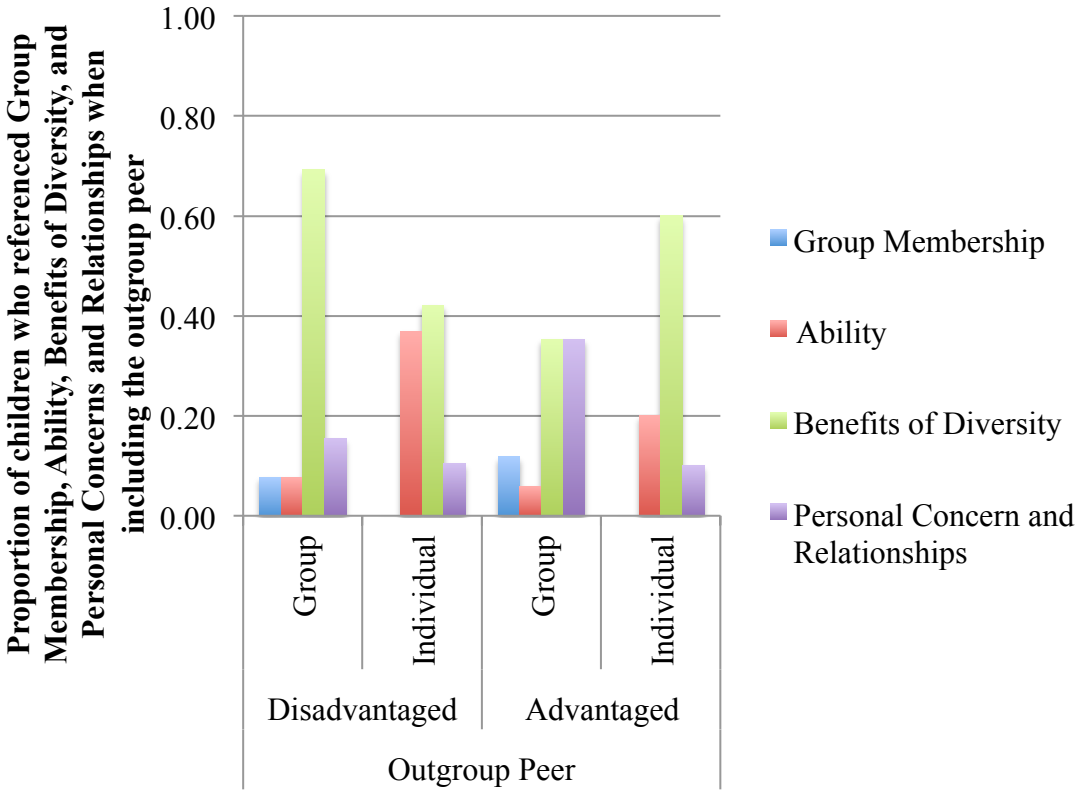

Proportion of children who referenced Group Membership, Ability, Benefits of Diversity, and Personal Concerns and Relationships when including the outgroup peer
1.00
0.80
0.60
0.40
0.20
0.00
Group
Individual
Group
Individual
Disadvantaged
Advantaged
Outgroup Peer
Group Membership
Ability
Benefits of Diversity
Personal Concern and Relationships

Figure 17. Proportion of children referencing Group Membership, Ability, Benefits of Diversity, and Personal Concerns and Relationships by their Inclusion Decision (Ingroup, Outgroup), Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Aim 3: Investigate how children's previous experiences with advantaged and disadvantaged status in individual- and group based inequalities relate to their perceptions of third-person inequalities.

Judgment of Perpetuating Allocation (Third-Person). To test hypotheses regarding children's judgments of allocations that perpetuate a third-person inequality an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) ANOVA was conducted with children's judgments of the perpetuating allocation as the dependent variable (see Figure 18). A main effect for Age was found, $F(1,157) = 13.44$, $p < .001$, $\eta_p^2 = .079$; children's judgments of perpetuating allocations became more negative with age. No other effects were found (all ps $> .20$).

Thus, our hypotheses were partially supported; children's age was related to their judgment of an allocation that perpetuates a third-person inequality.

Figure 18.

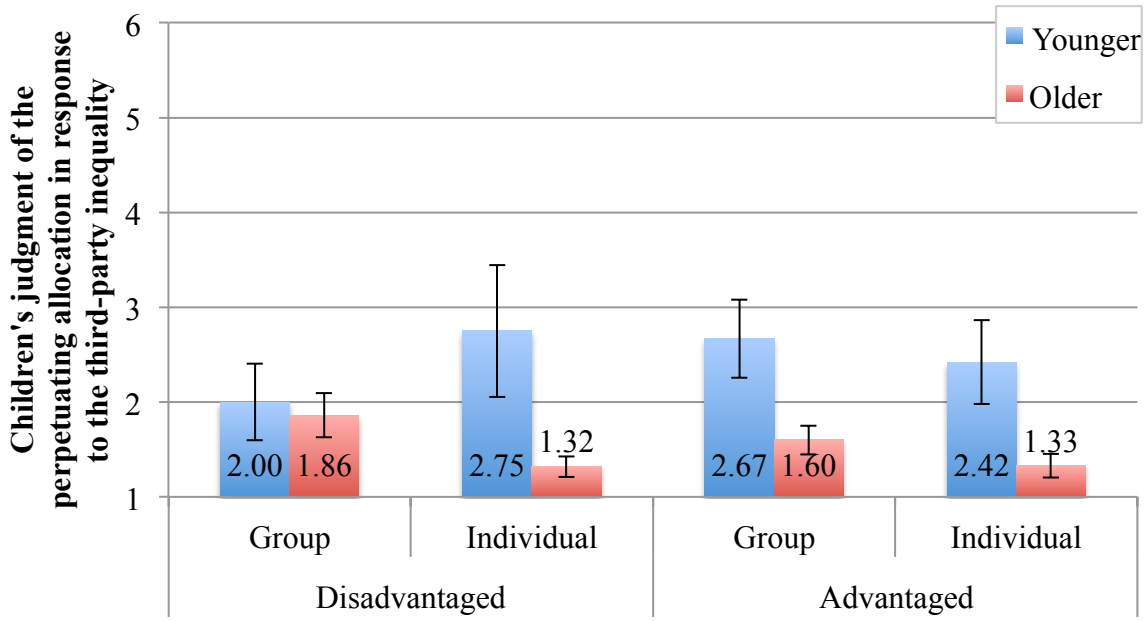


Figure 18. Children's judgment of the perpetuating allocation by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Not Okay" to 6 = "Really Okay". Bars represent the standard error of the means.

Judgment of Rectifying Allocation (Third-Person). To test hypotheses regarding children's judgments of allocations that rectify a third-person inequality an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) ANOVA was conducted with children's judgments of the rectifying allocation as the dependent variable (see Figure 19). A main effect for Age was found, $F(1,157) = 8.69$, $p = .004$, $\eta_p^2 = .052$; children's judgments of rectifying allocations became more positive with age. A main effect for Status was also found, $F(1,157) = 4.31$, $p = .04$, $\eta_p^2 = .027$; children who were previously disadvantaged by an inequality judged

rectifying the third-person inequality more positively than did children who were previously advantaged by an inequality. An Age X Status interaction was also found, $F(1,157) = 4.01$, $p = .047$, $\eta_p^2 = .025$; children who were previously advantaged by an inequality judged rectifying the third-person inequality more positively with age ($p < .001$). No differences were found for children who were previously disadvantaged ($p = .53$).

Thus our hypotheses were partially supported; children's judgments of allocations that rectify a third-person inequality were related to their age and status in a previous inequality context. With age, children who were advantaged by the previous inequality judged rectifying a third-person inequality more positively.

Figure 19.

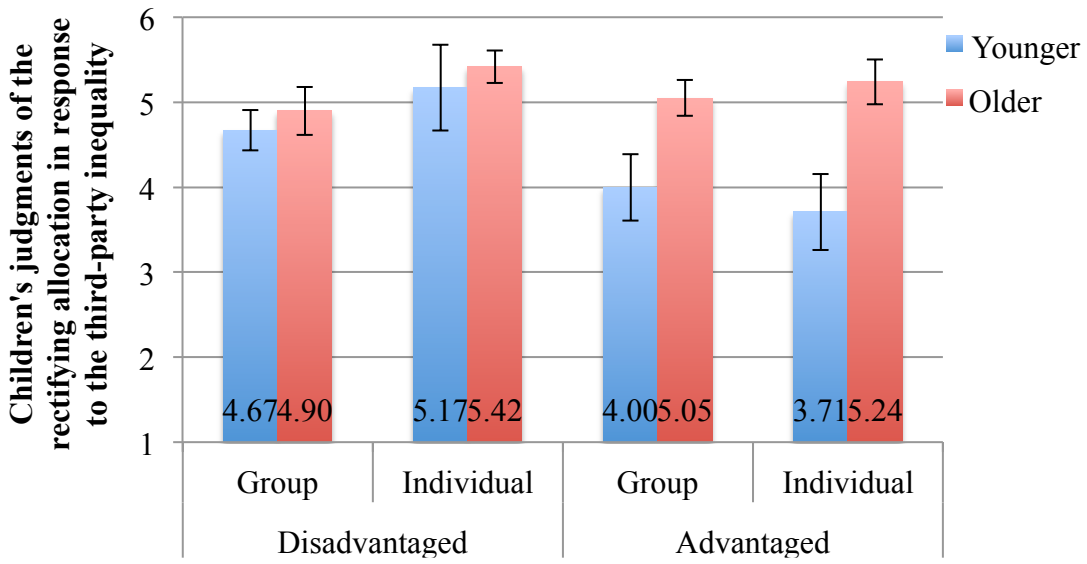


Figure 19. Children's judgment of the rectifying allocation by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale:

1 = “Really Not Okay” to 6 = “Really Okay”. Bars represent the standard error of the means.

Judgment of Equal Allocation (Third-Person). To test hypotheses regarding children’s judgments of equal allocations in response to a third-person inequality an Age (Younger, Older) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) ANOVA was conducted with children’s judgments of the equal allocation as the dependent variable (see Figure 20). An Age X Status X Type of Inequality interaction was found, $F(1,155) = 4.527$, $p = .035$, $\eta_p^2 = .028$. Older children who were advantaged by a *group based* inequality judged the equal allocation less positively than did older children who were advantaged by an *individual* inequality ($p = .05$). No other differences were found (all ps $> .25$).

Thus, our hypotheses were supported; children’s judgments of an equal allocation in response to a third-person inequality were related to their age, status in a previous inequality, and the type of inequality.

Figure 20.

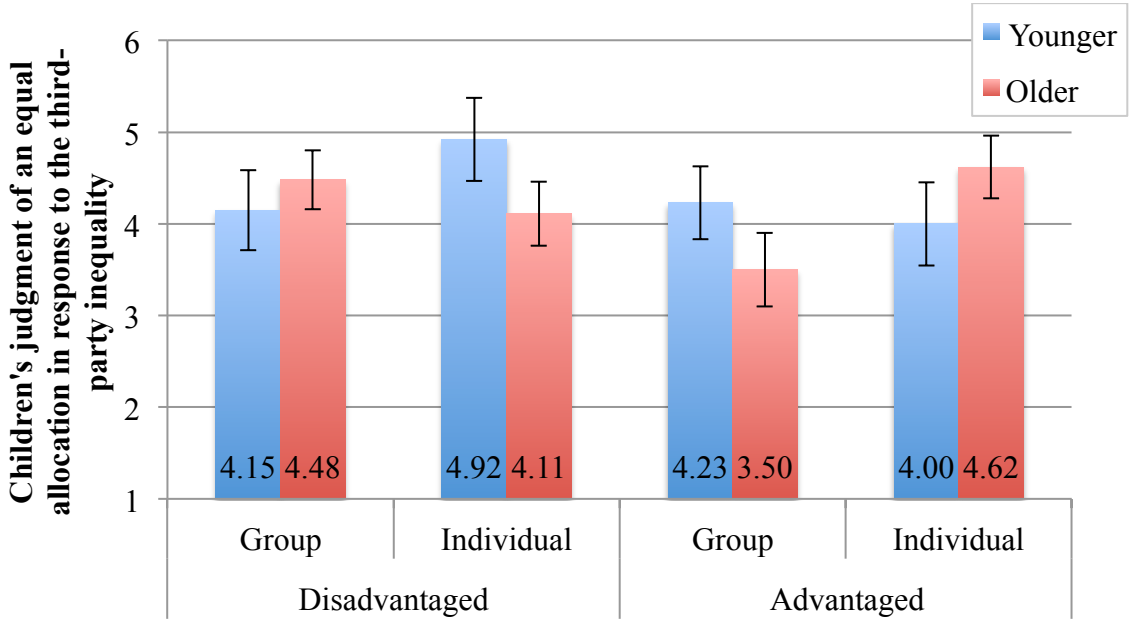


Figure 20. Children's judgment of the equal allocation by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual). Scale: 1 = "Really Not Okay" to 6 = "Really Okay". Bars represent the standard error of the means.

Own Allocation (Third-Person). To test hypotheses regarding children's resource allocations in response to a third-person inequality, X^2 tests were conducted to determine differences in children's chosen allocation strategy by Age, Status, and Type of Inequality (see Figure 21). A significant effect for Age was found, Likelihood Ratio X^2 (2) = 20.74, $p < .001$; younger children were more likely to perpetuate the inequality, whereas older children were more likely to rectify the allocation.

An Age X Status interaction was also found, Likelihood Ratio X^2 (2) = 16.08, $p < .001$; for children who were *advantaged* by a previous inequality, younger children were more likely to perpetuate the inequality ($p < .001$), whereas older children were more

likely to rectify the allocation. No differences were found for children who were *disadvantaged* by the inequality ($p > .05$).

Thus, our hypotheses were partially supported; children's resource allocations in response to a third-person inequality were related to their age and status in a previous inequality.

Figure 21.

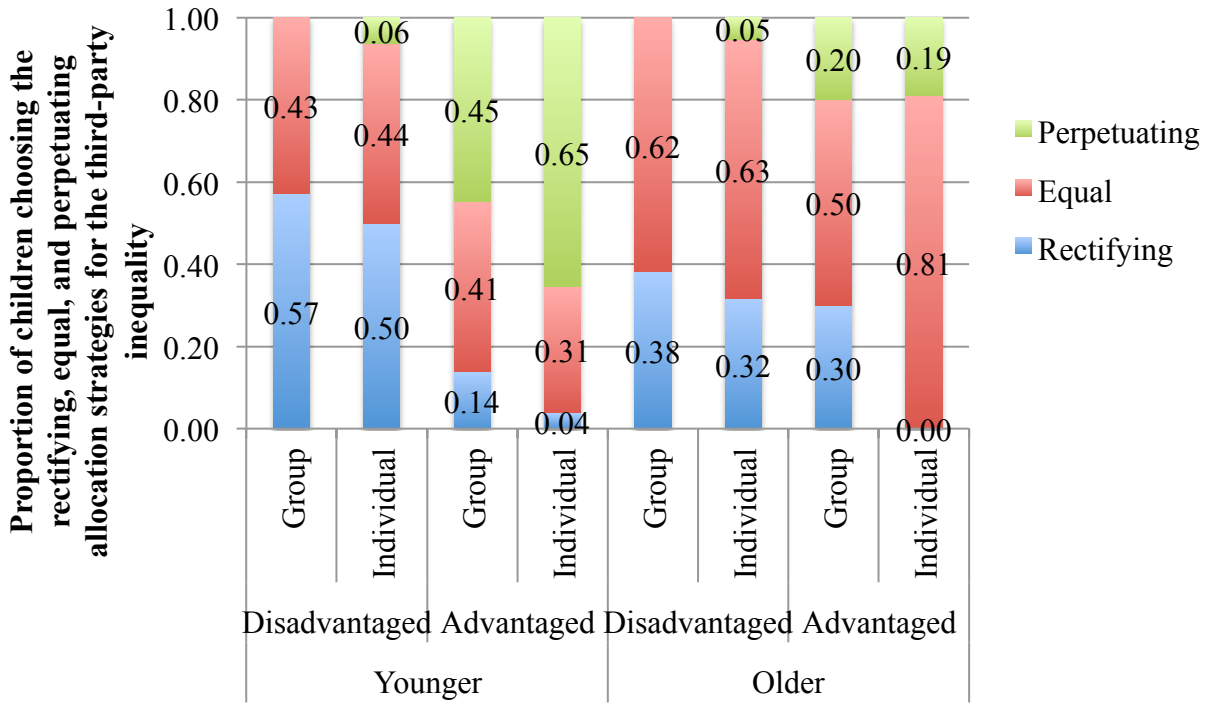


Figure 21. Proportion of children choosing the Perpetuating, Equal, and Rectifying allocations by Age (Younger, Older), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Aim 4: Investigate the bidirectional relationship between children's ToM capacities and their responses to inequalities, controlling for age.

Theory of Mind Descriptives. Children's performance on the ToM assessments was used to code their ToM competence into three levels, consistent with past research (Sobel & Austerweil, 2016; Wellman & Liu, 2004): Level 1 (failed both FB and BE), Level 2 (passed FB but failed BE), Level 3 (passed both FB and BE) (see Table 6).

Overall, 35 children were coded as Level 1, 29 children were coded as Level 2, and 107 children were coded as Level 3. To allow for analysis of how children's ability to represent others' emotional states based on their belief states, specifically, these ToM levels were collapsed into two: Less Advanced ToM (Level 1 and Level 2; failed FB and/or BE), More Advanced ToM (Level 3; passed both FB and BE). Overall, 64 children were coded as "Less Advanced" and 107 children were coded as "More Advanced." Splitting participants into "Less Advanced ToM" and "More Advanced ToM" groups based on their performance on the ToM has been successfully used to examine developmental changes in children's social and moral development (Chalik, Rivera, & Rhodes, 2014; Killen et al., 2011; Li et al., 2017; Mulvey, Rizzo, & Killen, 2015). All analyses assessing the effect of ToM were conducted with raw age (continuous) as a covariate.

Table 6. Proportion of children at each age at each level of ToM competence.

Age in Years	*n*	ToM Competence		
		Level 1	**Level 2**	**Level 3**
3 year olds	12	.33	.25	.42
4 year olds	44	.48	.16	.36
5 year olds	34	.24	.24	.53
6 year olds	32	.03	.13	.84
7 year olds	34	.03	.09	.88
8 year olds	15	.00	.27	.73

Judgment of Perpetuating, Rectifying, and Equal Allocations (First-Person). To test hypotheses regarding children's judgments of the three allocation strategies (Perpetuating, Rectifying, Equal), a ToM (Less Advanced, More Advanced) X Status (Advantaged, Disadvantaged) X Type of Inequality (Group, Individual) X Allocation Strategy (Perpetuating, Rectifying, Equal) ANOVA was conducted with repeated measures on the last factor (see Table 7).

A Status X Allocation Strategy interaction was found, $F(2,324) = 19.15$, $p < .001$, $\eta_p^2 = .11$. Disadvantaged children judged the rectifying ($p < .001$) and equal ($p < .001$) allocations more positively than perpetuating allocations, and did not differ between the rectifying and equal allocations ($p > .9$). Advantaged children, on the other hand, judged the equal allocation more positively than the rectifying ($p < .001$) and perpetuating ($p = .001$) allocations, and did not differ between the rectifying and perpetuating allocations ($p > .9$).

A Status X Type of Inequality X Allocation Strategy interaction was also found, $F(2,324) = 4.47$, $p = .012$, $\eta_p^2 = .027$. In the group condition, perpetuating allocations were judged more positively by disadvantaged than advantaged participants ($p < .001$) and rectifying allocations were judged more positively by advantaged than disadvantaged participants ($p = .043$), but no differences were found for equal allocations ($p = .073$). In the Individual condition, however, while rectifying allocations were judged more positively by disadvantaged than advantaged children ($p < .001$), no differences were found for perpetuating (p = .13) or equal allocations ($p = .46$).

Finally, a ToM X Type of Inequality X Allocation Strategy interaction was also found, $F(2,324) = 3.00$, $p = .05$, $\eta_p^2 = .018$. Children with less advanced ToM judged equal allocations more positively than perpetuating allocations for both group ($p < .001$) and individual ($p = .041$) inequalities, but did not distinguish between rectifying and equal, or between rectifying and perpetuating allocations (all ps > .06). Children with more advanced ToM, however, did distinguish between the allocation strategies; in the individual condition, children with more advanced ToM judged equal allocations more positively than rectifying ($p = .015$) and perpetuating allocations ($p < .001$), and judged rectifying allocations more positively than perpetuating allocations ($p = .015$). In the group condition, children with more advanced ToM judged equal ($p < .001$) and rectifying ($p < .001$) allocations more positively than perpetuating allocations, and did not distinguish between equal and rectifying allocations ($p > .90$).

Thus, our hypotheses were supported; children's ToM was related to their ability to distinguish between the various allocations in response to the inequality. Children with less advanced ToM only differed in their judgments of equal and perpetuating

allocations, whereas children with more advanced ToM differed in their judgments of all three allocations, and also considered the type of inequality in their judgments.

Table 7. Means and standard deviations for children's judgments of the perpetuating, equal, and rectifying allocations by ToM (Less Advanced, More Advanced), Status (Advantaged, Disadvantaged), and Type of Inequality (Individual, Group).

			Allocation Strategy					
			Perpetuating Allocation		**Equal Allocation**		**Rectifying Allocation**	
ToM	**Status**	**Type of Inequality**	***M***	**(SD)**	***M***	**(SD)**	***M***	**(SD)**
Less Advanced	Disadvantaged	Group	2.00	(1.58)	5.11	(1.05)	3.78	(2.33)
		Individual	2.92	(2.31)	4.08	(2.35)	4.92	(1.68)
	Advantaged	Group	3.95	(1.99)	4.59	(1.74)	3.64	(1.97)
		Individual	3.81	(2.02)	4.52	(2.02)	2.90	(1.73)
More Advanced	Disadvantaged	Group	1.91	(1.36)	4.70	(1.74)	5.15	(1.44)
		Individual	2.59	(1.40)	4.91	(1.54)	4.91	(1.19)
	Advantaged	Group	3.62	(2.06)	3.69	(2.00)	3.54	(2.12)
		Individual	2.88	(1.88)	5.08	(1.47)	3.27	(1.97)

Inclusion Decision. To test hypotheses regarding children's inclusion decisions, a generalized linear model was conducted with children's inclusion decision as the

dependent variable and ToM, Status, and Type of Inequality as the predictor variables (see Figure 22). The overall model was significant Likelihood Ratio X^2 (7) = 28.17, p < .001. A ToM X Status interaction, Wald X^2 (1) = 10.38, p = .001; [lower = -1.18; upper = -.385] Wald X^2 (1) = 14.92, p < .001, and a Status X Type of Inequality interaction, Wald X^2 (1) = 6.07, p = .014; [lower = -1.01; upper = -0.34] Wald X^2 (1) = 15.50, p < .001, were found. These interactions were explained by a ToM X Status X Type of Inequality interaction, Wald X^2 (1) = 4.68, p = .031; [lower = 0.059; upper = 1.20] Wald X^2 (1) = 4.68, p = .031. With increasing ToM competence, children who were disadvantaged by an individual inequality were increasingly likely to include their outgroup member (p < .001).

Figure 22.

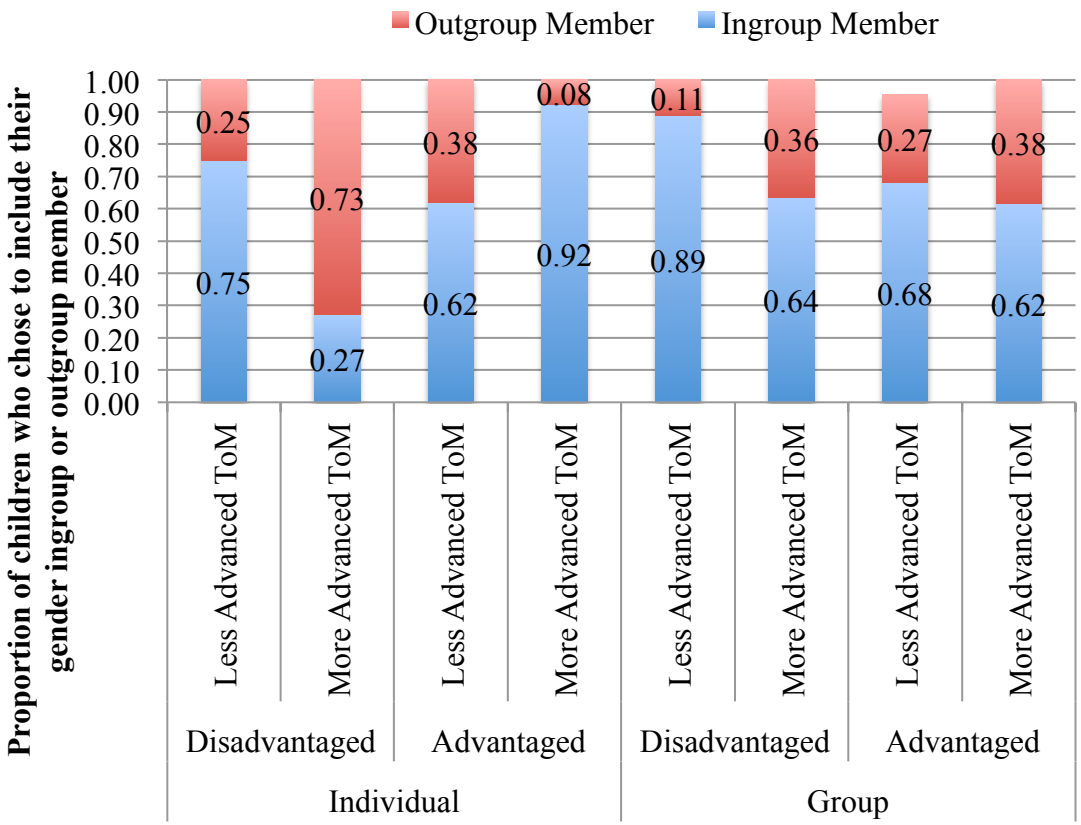


Figure 22. Proportion of children who chose to include their gender ingroup or outgroup member by ToM (Less Advanced, More Advanced), Status (Advantaged, Disadvantaged), and Type of Inequality (Group, Individual).

Effect of Status on Theory of Mind. To test the hypothesis that children's status in the previous inequality would relate to their performance on the ToM assessments, generalized linear models with a binomial probability distribution and a logit link function were conducted for each of the ToM assessments with Status and Type of Inequality as the predictor variables, and Age (calculated as a continuous variable) as a covariate.

False-Belief. The first model tested the hypothesis that participants' with disadvantaged status would be more likely to pass the FB ToM assessment than would participants with advantaged status, controlling for age. The overall model was significant (Likelihood Ratio $X^2(2, N = 172) = 42.68$, $p < .001$). Consistent with our hypothesis, results indicated a significant main effect for Status (Wald $X^2 = 5.50$, $df = 1$, $p = .019$; $B = -1.11$; 95% CI [-2.03, -.18]). Participants with disadvantaged status ($M = .88$) were more likely to pass the FB ToM assessment than were participants with advantaged status ($M = .73$). The covariate (Age) was also significant in the full model ($p < .001$).

Belief-Emotion. The first model tested the hypothesis that participants' with disadvantaged status would be more likely to pass the FB ToM assessment than would participants with advantaged status, controlling for age. The overall model was significant (Likelihood Ratio $X^2(2, N = 172) = 13.81$, $p = .001$). Our hypothesis was not supported, a main effect for status was not found ($p = .076$). The covariate (Age) was significant in the full model ($p = .002$).

Chapter V: Discussion

The present study provided novel findings regarding children's conceptions of fairness and the role of status in responses to inequalities. Specifically, the present study documented how 3- to 8-year-old children's status within an inequality (whether they received more or fewer resources than their peers) as well as the underlying motivation for the allocation (indivdidually or group based) have a significant influence on the way in which children allocate resources and interpret social inequalities. These are issues that children experience in their daily lives.

Overall, the findings support our social reasoning developmental (SRD) model, which asserts that children's judgments about fairness include intergroup (e.g., group identity), as well as psychological knowledge (e.g., mental state knowledge), considerations (Killen & Rutland, 2011; Killen, Rutland, Rizzo, & McGuire, 2017; Rutland & Killen, 2015; Rizzo & Killen, 2016). In particular, we found support for the SRD driven hypotheses that children's evaluations and responses to social contexts entail a coordination of moral (equity, equality, others' welfare, wrongfulness of discrimination), group (stereotypes, group functioning), and psychological (theory of mind) factors. Children's understanding for the moral concern for equity and equality was demonstrated in their judgments of the allocations, as well as their decisions to rectify unfair allocations that were based on gender discrimination.

At the same time, children also considered group concerns. For instance, the finding that advantaged children were more positive about redistribution when they expected it to come from a fellow – advantaged – ingroup member supports and extends

the SRD model by demonstrating how children's desire to remain loyal to their ingroup relates to their evaluations of their ingroup members' actions.

Finally, and perhaps most pronounced, the robust differences based on children's status within the context provides evidence for the SRD model in that children's psychological knowledge permeated their thinking and behavior. Children experiencing a disadvantaged status, for example, were more likely to pass theory of mind assessments than were children in an advantaged status.

The subsequent sections discuss how the present results bear on the literature, extend our understanding of children's developing conceptions of fairness and equality, and provide a basis for future research directions. Across four aims, the present study investigated the role of status (Advantaged, Disadvantaged) and the type of inequality (Individual, Group) in terms of children's perceptions of inequalities (**Aim 1**), intra- and intergroup attitudes (**Aim 2**), responses to third-person inequalities (**Aim 3**), and their ToM capacities (**Aim 4**).

Aim 1: Investigate how children's status (Advantaged, Disadvantaged) relates to their perceptions of individual and group based inequalities.

Perceptions of the allocations. Consistent with our hypotheses, children's judgments of the inequalities were related to their status within the inequality and the type of inequality. Children who were disadvantaged by the inequality judged it to be more unfair than children who were advantaged by it. However, both advantaged and disadvantaged children judged group based inequalities to be more unfair than

individually based inequalities. These results provide the first evidence that children incorporate the source of an inequality when evaluating the fairness of the allocation. That is, although past research has documented children's developing concern for equality, and aversion to inequalities (Rizzo & Killen, 2018; Schmidt et al., 2018; Shaw & Olson, 2012), the present results are the first to document that children incorporate the underlying reason for why resources are being allocated unequally when evaluating the fairness of the allocation. These findings indicate that 3- to 8-year-old children differentiate between inequalities based on intergroup factors, such as gender discrimination, and individual factors, such as individual performance.

Further, the present study is the first to document that children's judgments and behavior do not just differ across these allocation contexts, but also depend on their perspective within the context. Children who were disadvantaged by the inequality judged it to be significantly more unfair than children who were advantaged. These results highlight the importance for research to consider children's perspective within a morally-relevant context when assessing their moral development. Past research has typically investigated children's moral evaluations in third-person contexts, given that a critical feature of moral judgments is that they are both generalizable (apply across contexts) and impersonal (apply to all individuals). However, the present results suggest that children's perspective within a context can have a significant influence over how they perceive that context, and the factors that they prioritize when evaluating and responding to it. Thus, it is important for future research to continue to assess children's evaluations of morally-relevant contexts from a range of perspectives.

Interestingly, children who judged the inequality to be unfair primarily reasoned about the moral concern for equity, suggesting that their negative evaluation of the allocation stemmed from their concern for ensuring that all recipients receive their fair share. By contrast, children who judged the inequality to be okay primarily referenced their own personal desire for more resources (e.g., "It's okay because I think we wanted them more"). These results suggest that children are actively reasoning about a range of concerns when evaluating an allocation, and that the concerns that children focus on are highly related to their judgment of the allocation as fair or unfair.

Finally, children's evaluation of their own welfare following the allocations provides critical evidence regarding children's emotional reactions to discrimination. Younger children, in particular, reported feeling worse when they were disadvantaged due to their group membership than when they were disadvantaged due to their individual performance. These results support research documenting how discrimination based on group membership is especially harmful to young children's wellbeing, even when compared to other forms of intra-personal exclusion, such as exclusion based on personal traits (e.g., shyness) (Park & Killen, 2010; Killen, Elenbaas, Rizzo, & Rutland, 2016). Interestingly, older children also reported feeling better when they were advantaged by an individual allocation than when they were advantaged due to their gender. These results provide further evidence that, with age, children attend to the reason why they are receiving more or fewer resources than their peers, and feel more positively when they earn the resources than when they receive resources unfairly. These findings contribute to research on the relationship between children's moral judgments and their expectations regarding how transgressors will feel following a transgression (Killen & Malti, 2015;

Malti & Krettenauer, 2013) by providing novel insight into how children *themselves* feel when being advantaged by an ingroup member's potential transgression.

Expectations of outgroup members' perceptions. We hypothesized that children's expectations of others' welfare and judgments of the inequality would change with age and be related to their status and the type of inequality. Surprisingly, children's perceptions of their outgroup member's welfare and judgment of the inequality were only significantly linked to their status. Children who were advantaged by the inequality recognized that their (*disadvantaged*) outgroup member would feel worse, and judged the inequality to be more unfair, compared to children who were disadvantaged by the inequality expected their (*advantaged*) outgroup member to feel. These results were especially interesting given that children incorporated the type of inequality into their own judgments and welfare. Although it may be surprising that children incorporated the type of inequality into their own, but not their expectation of others', judgments and welfare, past research has also documented how children struggle to understand the nuance in others' perceptions of transgressions (Cooley & Killen, 2015; Elenbaas & Killen, 2016; Li et al., 2017). These results suggest that, particularly in salient intergroup contexts, children may continue to struggle to fully understand the perspective of their outgroup peers.

Perceptions of control. An important component of understanding children's perceptions of intergroup discrimination is children's ability to recognize when someone is being treated differently due to a factor that they can control (e.g., their effort or performance on an activity), or a factor that is beyond their control (e.g., their gender group membership). Consistent with our hypotheses, the results indicated that, with age,

children were more likely to report that the disadvantaged group had no control over the group based than individually based allocation. Thus, consistent with children's judgments and reasoning about the inequality, by 6- to 8-years-old, children were able to recognize that, while there is something that they can do to avoid being disadvantaged by an individually based inequality, there was little that they could do to resist gender based biases and discrimination. Further, children's reasoning supported this assessment; children explicitly reasoned about trying harder at the puzzles when reasoning about what they could do following an individual allocation (e.g., "The boys should have just tried harder"), and reasoned about structural biases when reasoning about why nothing could be done in the gender based context (e.g., "He just gave everything to the boys, it didn't even matter what we did").

These results provide the first evidence that, by 6- to 8-years-old, children are actively thinking about what can – and conversely what cannot – be done following a potential transgression. Research suggests that children begin to understand the concept of free will and agency early in childhood, and that providing children with the perception of choice can help them act prosocially in peer contexts (Chernyak & Kushnir, 2017; Nucci, 1981). Thus, the present results extend the extant literature on the role of children's perceptions of choice and agency in morally relevant contexts by documenting how children consider the causal factors associated with a potential transgression (e.g., whether an unequal allocation occurred due to individual abilities or gender biases), and incorporate this into their perceptions regarding what can be done – if anything – to address the transgression. Future research should continue to investigate the role of agency in children's responses to moral transgressions by, for example, examining how

children's perceptions of agency relate to their willingness to intervene on another peer's behalf, particularly when they perceive them to have little agency over the situation.

It is also important to note that approximately 11% of children spontaneously indicated that the disadvantaged group should protest the allocation by either appealing to the advantaged group, or by reporting the unfair allocation to a teacher or other authority figure. These results contribute to a recent line of research documenting 3- to 5-year-old children's willingness to spontaneously protest conventional, and especially moral, transgressions (Rakoczy, Warneken, & Tomasello, 2008; Vaish, Missana, & Tomasello, 2011), by extending our understanding of how – and in what contexts – children protest allocations that they perceive to be unfair.

Judgments of redistribution. Although previous research has indicated that children prefer equal allocations and voice an aversion to unequal allocations (Rizzo & Killen, 2016; Rizzo et al., 2016; Schmidt et al., 2016; Shaw & Olson, 2012), no study to date has examined children's perceptions of redistributing resources following an unequal allocation (which entails actively taking resources from one group to give to another). Understanding children's developing perceptions of redistribution is critical to understanding how children evaluate different strategies for rectifying inequalities, and provide a theoretical insight into how children incorporate issues related to ownership and resource transition into their conceptions of fairness. Consistent with our hypotheses, we found that children's judgments of redistribution were linked to their age, status within the inequality, the type of inequality, and whom they thought suggested the redistribution. Younger children were positive about redistribution regardless of whether they were redistributing earned resources (individual condition) or resources that were

obtained due to ingroup biases (group condition). Older children, by contrast, were more positive about redistributing resources following gender based than individually based allocations. These results suggest that, younger children's concern for equality may outweigh their concern for personal ownership (see Friedman, Van de Vondervoort, Defeyter, & Neary, 2013), but, with age, children consider personal ownership over resources – along with how those resources were acquired – when reasoning about redistribution.

Importantly, children's judgments of redistribution were also linked to their expectations of who suggested the redistribution. Children who were themselves advantaged by the allocation were more positive about redistribution when they perceived a fellow (*advantaged*) ingroup member – as opposed to a disadvantaged outgroup member – to be the one who suggested redistributing the resources. This result, in particular, has implications for our understanding of how children resolve peer conflicts in their daily lives. Calls to rectify unfair allocations are seemingly more effective when they are perceived to be coming from the children who are advantaged by the unfair allocation. These results are also interesting when linked to research documenting that, with age, children expect their fellow ingroup members to attempt to advantage their ingroup, even if they themselves would prefer to act fairly (Cooley & Killen, 2015; Rizzo, Cooley, Elenbaas, & Killen, 2017). Overall, although children may be less likely to expect their ingroup member to want to rectify an unequal allocation that favors their group, these instances may be especially helpful for reducing intergroup discrimination, and future research should thus examine how to facilitate these types of interactions.

Judgments of perpetuating, rectifying, and equal allocations. Consistent with our hypotheses, children's judgments of perpetuating, rectifying, and equal allocations were related to their age, status, and the type of inequality. When the allocation was based on gender biases, disadvantaged children rated equal and rectifying allocations positively and perpetuating allocations negatively, whereas advantaged children were relatively neutral on all three allocation strategies, though their judgments of perpetuating allocations decreased slightly with age. When the allocation was based on individual abilities, however, although disadvantaged children remained consistent in their positive judgments of equal and rectifying allocations, advantaged children judged equal allocations to be the only fair means of allocating the new set of resources.

These results provide an important conceptual contribution to our understanding of children's developing concern for equality and equity. Past research has documented that, *in the context of preexisting inequalities*, children's evaluations of rectifying allocations increases with age, whereas, with age, children evaluate equal allocations to be unfair (Rizzo & Killen, 2016). The present study provides support for the former, particularly when children were advantaged by the allocation, but children's judgments of equal allocations were more nuanced. Children who were advantaged by the inequality were more positive about equal allocations when the inequality was established due to individual effort than when it was established by gender biases. This suggests that, when older children were advantaged by an individually based inequality, they perceived the allocation of new resources to be relatively independent of the initial allocation, judging equal allocations to be more positive than both rectifying and perpetuating allocations. Contrastingly, when children were advantaged by a gender based inequality, older

children remained relatively neutral about all three allocations. These results suggest that children's understanding of how to respond appropriately to instances of gender based discrimination that advantage them is still developing during this period. Future research should extend the age range of the present study to investigate how older children and adolescents evaluate the various responses to gender based inequalities, particularly when they are advantaged by them.

Own allocations. Children's own behavioral allocations following an inequality provide an important insight into how children respond to the various types of resource disputes that they experience in their daily lives. Supporting our hypotheses, children in the present study allocated resources differently based on their status within the allocation, as well as the type of inequality, and these allocations also changed with age. Notably, decisions to perpetuate the inequality decreased with age, whereas equal allocations increased. This trend was especially true for children who were advantaged by the inequality, suggesting that, with age, children come to recognize the unfairness of perpetuating inequalities that disadvantage their outgroup peers. Supporting this account, children primarily reasoned about equity and equality when justifying their decision to allocate equally or to rectify the inequality.

Children's allocation decisions, and their reasoning about those decisions, were also related to whether they had witnessed an individually- or group based allocation; advantaged children were more likely to rectify the inequality when it was brought about by ingroup bias and were more likely to perpetuate the inequality when it was brought about by individual performance. With age, children also became more likely to reason about the concern for equity in the group context, whereas they were more likely to

reason about Merit in the individual context. These results suggest that, especially with age, children become better able to incorporate how an inequality was established into their responses to the inequality. Overall, what appears to be happening is that, with age, children who were advantaged by the group inequality begin to recognize the unfairness of the allocation, and increasingly focus on equity when deciding to rectify the inequality, and children who were advantaged by the individual inequality view the subsequent allocation of resources as a novel context, and allocate equally in response. In this latter context, children frequently mentioned how they had already received their share of the resources for "winning" the activity, and believed that this new allocation should be conducted equally, to reflect the fact that no one has performed better or worse for these new resources.

Summary for Aim 1. Across a range of assessments, the present study revealed critical differences in how children perceive of, and respond to, inequalities based on participants' status within the inequality, as well as whether the inequality was brought about by individual performance or gender discrimination. Children's status, in particular, was related to every aspect of children's perceptions and responses to the inequalities; compared to children who were advantaged by the inequality, disadvantaged children evaluated the inequalities more negatively, felt worse following them, perceived themselves to have less control, were more positive about attempts to redistribute the resources and rectify the inequality, and were more likely to actively rectify the inequality themselves when given the opportunity. These results punctuate the importance of considering children's own perspective within a context when assessing their social and moral development.

Additionally, the present study provides novel insight into how children incorporate the origins of an inequality (whether it was brought about by individual or group factors) into their perceptions and responses. Particularly with age, children evaluated gender based inequalities to be more unfair, more personally harmful, and more important to redistribute and rectify than inequalities based on disparate levels of performance on an activity. Interestingly, although children were across the board negative about gender based inequalities, there were many ways in which children actively supported inequalities that were the result of differing levels of merit. Older children reported feeling especially positive when they were advantaged by the individual allocation, and children explicitly reasoned about the moral concern for merit when justifying their judgments of the inequalities, reasoning about their perceptions of control, and explaining their own allocation. Thus, the present study provides the first piece of evidence that, by 3- to 8-years-old, children are actively incorporating the origins of an inequality into their perceptions of, and responses to, the inequality context.

Aim 2: Determine how different resource allocation contexts influence children's intra- and intergroup attitudes, with age.

The previous section reviewed and discussed children's perceptions of, and responses to, resource inequalities. This section will review and discuss how children's experiences in those resource allocation contexts influence their intergroup attitudes (i.e., children's reported favorability and attributions of abilities to ingroup and outgroup members) and inclusion decisions. An analysis of how children's experiences with inequalities relate to their future intergroup attitudes and inclusion decisions is critical,

especially given that children frequently move between multiple activities throughout their daily lives. Thus, understanding how experiences in one context might relate to children's actions in a separate context is necessary for understanding the complexities of children's social and moral development.

Consistent with our hypotheses, children's intragroup attitudes, inclusion decisions, and reasoning for their inclusion decisions reflected age related changes, as well as differences by participants' status and the type of inequality. Although children were generally more favorable towards ingroup members than outgroup members regardless of condition, children's attributions of ability to ingroup and outgroup members varied across conditions. With age, children attributed higher levels of ability to outgroup members, and this was especially true when outgroup members performed well on the activities in the individual condition.

Supporting these results, children were also more likely to choose to include the outgroup peer who performed well on the activities in the individual condition. These results are especially important given research indicating children's robust tendency to self-segregate into gender groups (Mehta & Stough, 2009; Ruble, Martin, & Berenbaum, 2006) and preferentially include gender ingroup members (Killen et al., 2013; Mulvey & Killen, 2015). In the present study, children included their ingroup peer 66% of the time, supporting the extant literature on children's desire to primarily interact with their gender ingroup peers. Of particular importance, however, older children who witnessed an outgroup member performing well at the activities preferentially included that gender *outgroup* peer an overwhelming 79% of the time, and explicitly reasoned about their outgroup peer's ability when reasoning about their inclusion decision.

Especially given children's strong preference for including gender ingroup peers in most contexts, finding contexts in which children actively want to reach across gender group boundaries to include outgroup peers has promising implications for children's intergroup attitudes. While past research has documented other contexts in which children will include gender outgroup peers, much of this research is with older children or adolescence, and occurs in contexts where children are including an outgroup peer over an ingroup peer who espouses explicitly immoral views (e.g., wanting to discriminate against outgroup peers) or a desire to act counter to ingroup norms (e.g., by refusing to wear an ingroup identifier or uniform) (Killen et al., 2013; Mulvey & Killen, 2015; Rizzo, Cooley, Elenbaas, & Killen, 2017). The results of the present study suggest that highlighting the exemplary performances of children's gender outgroup peers may lead to increasingly positive intergroup attitudes and constructive intergroup interactions.

Interestingly, children's reasoning for their inclusion decision also reflected important differences regarding how children's status frames the way they think about inclusion decisions; children who were advantaged by the inequality focused more on their peers ability and group memberships (e.g., selecting peers based on whom the expect to help their future team win; "she's the best at these things!"), whereas children who were disadvantaged by the inequality focused on personal relationships and group membership when including their ingroup peers (e.g., "we're already best friends").

Summary for Aim 2. The second aim of the present study was to investigate how children's experiences with inequalities relate to their intergroup attitudes and inclusion decisions. The present study yielded important insight into a potential mechanism to support positive intergroup attitudes and relationships. Specifically, providing children

with direct evidence of an outgroup member's ability increased children's attributions of abilities, and desire to include, a gender outgroup peer. These results highlight the importance of establishing constructive intergroup contexts in which children are encouraged to affiliate and work with peers from different group memberships.

These results also provided strong support for the SRD model, in that children's intergroup attitudes and inclusion decisions reflected a mix of moral, group, and personal/psychological concerns. In the inclusion context, children's group concerns had a drastic impact on their intergroup attitudes and inclusion decisions – children were more favorable to ingroup than outgroup members, attributed higher levels of abilities to ingroup members in general, and – in all but one context – preferentially included their ingroup member. Children's explicit references to their peers' gender group memberships also supports the SRD model's hypothesis that children are actively reasoning about group concerns while making important social inclusion decisions. Evidence was also found to suggest that children were considering moral (e.g., by asserting that peers should be included or not based on their abilities, not their group membership) and personal (e.g., by referencing the personal relationships that they had established) concerns when making inclusion decisions.

Aim 3: Investigate how children's previous experiences with advantaged and disadvantaged status relate to their perceptions of third-person inequalities.

Consistent with the previous aim's focus on how children generalize from their experiences in one context to their judgments and behavior in a separate context, this section will examine how children's firsthand experiences with inequalities relate to their

judgments and behavior in a third-person allocation context. Specifically, this section will examine how children's status within an inequality relates to their judgments of various allocation strategies, as well as their own allocation, in a third-person inequality context (where children observe an inequality between two recipients and have no personal claim to the resources).

Research on children's developing responses to inequalities, including the results presented above, has begun to provide a clear picture of how children think resources should be allocated in response to inequalities (Elenbaas et al., 2016; Rizzo & Killen, 2016; Schmidt et al., 2017; Paulus, 2014). No research to date, however, has investigated how children's own *experiences* in resource allocation contexts relate to their subsequent allocation decisions in separate contexts. Supporting our hypothesis that children's status within an inequality context would relate to their allocation decisions in a separate, third-person, allocation decision, the present study documented how children who were previously disadvantaged by an inequality were more likely to rectify a third-person inequality, and evaluated allocations that rectified the inequality more positively, with age. Interestingly, however, differences were not found for children's judgments of equal and perpetuating allocations. This may be due to the fact that even young children recognized the wrongfulness of perpetuating an inequality, and that older children were hesitant to negatively evaluate an equal allocation in this third-person context.

These results provide initial evidence regarding into how children actively construct their conceptions of fairness, and in turn their responses to inequalities. As children experience inequalities, they gain a broader understanding of the harmful consequences of inequalities, as well as a more personal understanding of the overall

perspective of disadvantaged individuals. Supported by children's own reported welfare following the first-person inequality, the present results suggest that when children experience being disadvantaged, they become particularly sensitive to how a disadvantaged peer might feel, how that peer might evaluate the allocation, and what responses to the allocation (e.g., rectifying it, or allocating equally) may help to mitigate these harmful consequences. Importantly, the results in the present study are correlational; future research should continue to investigate this developmental hypothesis using longitudinal designs that allow for a causal analysis of how children's experiences with inequalities relate to their developing conceptions of fairness.

Summary for Aim 3. The third aim of the present study was to examine how children's experiences with first-person inequalities related to their perceptions of, and responses to, third-person inequality contexts. The results support the hypothesis that children's experiences with advantaged and disadvantaged status are related to children's sensitivity to issues relating to equity and equality. Given that children move between a range of different contexts throughout their daily lives, understanding how children take experiences in one context into subsequent contexts is an important area for future research.

These results also provide support for an important component of the SRD model, in that children's initial experiences were directly related to their evaluations and responses in subsequent contexts. The SRD model asserts that children actively construct their developing conceptions of moral and social issues based on their experiences engaging in, and observing, peer encounters. Consistent with this, the present study suggests that children's everyday experiences with resource disputes (such as receiving

more or fewer toys or prizes than their peers) contributes to children's understanding of these issues, and in turn how they decide to act in future disputes.

Aim 4: Investigate the bidirectional relationship between children's theory of mind (ToM) capacities and their responses to inequalities, controlling for age.

The final aim of the present study was to investigate children's ToM capacities as a potential developmental mechanism for their conceptions of fairness. The first subsection examines this directly, by discussing how children's ToM performance is related to their perceptions of, and responses to, the various inequality contexts in the present study. The second subsection in turn examines the bidirectional nature of the relationship between children's ToM and their moral development by examining how children's immediate context (e.g., their status within an inequality) relates to their ability to accurately identify others' mental states, as assessed by the standard ToM assessments used in the present study.

How ToM relates to children's perceptions of inequalities. We hypothesized that children's ToM capacities would serve as an important developmental mechanism to account for age-related changes in children's perceptions of, and responses to, inequalities. To test this hypotheses, analyses were conducted, controlling for age, to determine how children's performance on the ToM assessments was related to their judgments regarding how resources should be allocated and their inclusion decisions. Supporting our hypotheses, with increasing ToM competence, children were more positive about equal allocations than rectifying and perpetuating allocations in response to the individually based allocation context, and were more positive about both equal and

rectifying allocations than perpetuating allocations in the group based allocation context. These results suggest that children's ToM capacities play a critical role in their developing ability to incorporate the intentions of the allocator (whether they intended to reward participants based on their performance at the tasks, or based on their gender group membership) into their perceptions of how the resulting allocation should be addressed. This interpretation is consistent with past research documenting how children's ToM competence plays an important role in their moral development generally (Smetana et al., 2012; Killen et al., 2011), as well as their ability to infer others' intentions in resource allocation contexts (Li et al., 2017; Rizzo & Killen, 2017). Importantly, the present results extend our understanding of these issues by documenting how children's ToM competence enables them to consider whether an allocator has legitimate (e.g., intending to allocate resources meritoriously), or unfair (e.g., intending to allocate resources according to ingroup bias) intentions when evaluating the resulting allocation.

Further supporting our hypotheses, children's ToM competence was also related to their decision to cross group boundaries by including a gender outgroup peer. In particular, children with more advanced ToM, but not those with less advanced ToM, were more likely to choose to include an outgroup peer whom they witnessed performing well at the activities. Notably, this group was the only one to preferentially include an outgroup member. These results support past research documenting how children's ToM capacities play an important role in their intergroup attitudes by allowing children to view individuals in terms of their own unique mental states (e.g., desires, abilities,

preferences), rather than being defined by their group membership (Mulvey, Rizzo, & Killen, 2015; Rizzo & Killen, 2017).

How children's status within an inequality relates to their ToM. The ability to identify others' mental states plays a fundamental role in how we interact in social contexts. Recognizing how our actions, or the actions of those around us, will impact others is critical to ensuring the fair treatment of others. The results from the present study are the first to demonstrate how children's perceived social status relates to their ability to accurately identify others' mental states; children who were assigned to hold an advantaged status performed worse on the false-belief assessment compared to children who were assigned to hold a disadvantaged status.

Past research has largely discussed mental state understanding as a stable, fixed competence, which one either does or does not possess. Specifically, in many instances, past research has assessed how participants' performance on a ToM assessment in one context predicts other aspects of their social-cognitive competencies or behaviors, arguing that children's performance on a ToM assessment is indicative of their ability to represent others' mental states, and that this ability (which children either do or do not possess) is linked to other social competencies (e.g., Chalik, Rivera, & Rhodes, 2014; Dunn, Cutting, & Demetriou, 2000; Killen et al., 2011; Li, Rizzo, Burkholder, & Killen, 2017; McLoughlin & Over, 2017; Mulvey, Rizzo, & Killen, 2015; Peterson & Siegal, 2002; Rizzo & Killen, 2017).

One explanation for the present results is that participants who were assigned the disadvantaged status were more motivated to think and reason about the potential causes of the status differences (Brown & Bigler, 2004, 2005; Kraus, Côté, & Keltner, 2010;

Kraus et al., 2012). Alternatively, participants who were assigned the advantaged status may have been more likely to avoid thinking about others' mental states, to ignore (implicitly or explicitly) acknowledging that the fact that they were unfairly advantaged at someone else's expense. This hypothesis is consistent with research linking outgroup dehumanization to decreases in individuals' attributions of mental states to outgroup members (Haslam, 2006; McLoughlin & Over, 2017). Taken together, the present results are consistent with the argument that individuals' contextualized perspective plays a role in determining their proclivity to think and reason about others' mental states.

Summary for Aim 4. The final aim of the present study was to investigate the bidirectional relationship between children's ToM and their moral development. The present study provided continued support for the hypothesis that children's ToM capacities serve as an important developmental mechanism for their moral development broadly, and their conceptions of fairness in particular (Killen et al., 2011; Smetana et al., 2012; Sodian et al., 2016). With increasing ToM, children were more supportive of rectifying gender based inequalities, and were more likely to include a gender outgroup peer. These results suggest that children's ToM plays an important role in their increasing concern for the harmful consequences of discrimination, as well as their ability to view outgroup members in terms of their mental states (e.g., their desires, preferences, and abilities), rather than as being defined by their group memberships.

The present study was also the first to document how children's status within a context relates to their ability to accurately identify others' mental states. Children who were randomly assigned to an advantaged status performed worse on a standard false-belief ToM assessment than did children who were randomly assigned to a disadvantaged

status. These results have important implications for how ToM is conceptualized as a social-cognitive capacity – in that it is variable across contexts, rather than being a fixed trait – and for our understanding of how children perceive contexts involving discrimination.

These results provide strong support for the SRD model's assertion that children's social-cognitive abilities to consider others' psychological states (e.g., their desires, beliefs, and intentions) are crucial for their social and moral development. Specifically, the SRD model argues that as children become better at thinking about and understanding the perspectives of others, they are better able to incorporate others' desires and beliefs into their own understanding of social contexts.

Limitations and Future Directions

As discussed above, the present study provides insights into children's social and moral development, with a particular focus on how children perceive and respond to various inequality contexts based on their status and the type of inequality. There are a number of new research directions that could extend the findings in new ways, and to address potential limitations from the current study.

Intergroup contexts. In particular, the present study focused on gender for the intergroup contexts. Throughout the lifespan, individuals affiliate with numerous group identities. Although some of these affiliations are relatively stable (e.g., one's gender or race), others are highly malleable (e.g., one's school or career affiliation or geographic location). The present study investigated gender as the key intergroup variable due to the salient aspect of gender in early childhood, as well as research indicating that instances of

gender discrimination are pervasive from childhood to adulthood (Mehta & Stough, 2009; Ruble, Martin, & Berenbaum, 2006; Mulvey & Killen, 2015).

Future studies, however, should continue to investigate a range of intergroup factors, such as race, nationality, or school/career/club affiliations, which vary in their salience to participants and their stability across the lifespan. Race, for example, may provide an interesting contrast to gender as an intergroup variable. By early childhood, children are already aware of different racial categories, and begin to show instances of racially based preferences and negative stereotypes about racial outgroup members (Dunham, Stepanova, Dotsch, & Todorov, 2015; Elenbaas et al., 2017; Kinzler, Dopoux, & Spelke, 2007; Mandalaywala & Rhodes, 2016). Yet, intergroup conflicts regarding race operate very differently from those pertaining to gender, and involve unique concerns. For example, while intergroup contact is thought to be an important component to reducing racially based prejudice and discrimination (Allport, 1954; Brewer & Brown, 1998; Cameron, Rutland, Hossain, & Petley, 2011). Thus, although similar patterns of results may be found when substituting race for gender in future research on these topics, it is likely that children's increased awareness of the wrongfulness of racially based exclusion may lead them to perceive racially based inequalities more negatively.

Different forms of status disparities. Another area that is important for future research to explore is how children perceive of, and respond to, different forms of status disparities. In the present study, status was operationalized as possessing more (Advantaged) or fewer (Disadvantaged) resources than one's peer. Although this constitutes one important dimension of status, other forms of status may yield different patterns of results (Ridgeway, 2011). Operationalizing status in terms of one's control

over a context (e.g., who gets to make important decisions or who is assigned to prestigious posts), for example, may provide an interesting contrast to the present study. Given that status based on control or prestige is more abstract than the possession of resources, it is likely that the developmental patterns documented in the present study would be delayed into adolescence or adulthood.

Directionality of effects. The present study extended the extant literature on children's perceptions of, and responses to, inequalities by directly comparing children's responses from both advantaged and disadvantaged perspectives. This comparison, however, leaves open questions regarding the directionality of the effects. For example, is it the case that children who were disadvantaged by an inequality evaluated it to be more wrong, that children who were advantaged by an inequality evaluated it to be less wrong, or a combination of both? Future research should investigate this question empirically by assessing children's responses to social and moral contexts from a range of both first- and third-person perspectives. This question is particularly important given that, although all of these perspectives (e.g., advantaged, disadvantaged, third-person witness) are distinct, valid perspectives on a context, understanding how children's perceptions change based on their perspective is critical to a full understanding of social and moral development.

Cross-sectional and longitudinal designs. Finally, it is important to note that the present study utilized a cross-sectional design to examine how children's experiences with inequalities relate to their intergroup attitudes (Aim 2), responses to third-person inequalities (Aim 3), and ToM (Aim 4). The results of the present study constitute critical first steps in examining these issues empirically. It is important to note, however, that future research using longitudinal or fully counterbalanced approaches designed to assess

causal relations between variables are needed to fully establish a causal link between children's experiences with inequalities and their intergroup attitudes, responses to third-person inequalities, and ToM. Future research along these lines has the potential to expand our understanding of key, causal, developmental mechanisms associated with children's social moral development – namely, how children's experiences influence their development.

"With age". Aims 1, 2, and 3 examined how children's perceptions of, and responses to various inequality contexts changed, *with age*. Although Aim 4 provided some evidence that children's developing ToM competencies play a role in their developing perceptions of, and responses to, these contexts, future research should continue to examine what, exactly, is changing *with age*. It is highly unlikely that the developmental patterns documented in the present study can be generally attributed to maturational processes, or even the development of domain general cognitive skills such as executive functioning or language understanding. The results of Aims 2 and 3 provide tentative evidence that children's early *experiences* – which occur *with age* in typically developing children in the proposed population – play an important role in their developing understanding of inequalities. For example, younger children, but not older, who were disadvantaged by the first-person inequality were in turn more likely to positively evaluate rectifying a subsequent third-person inequality. This suggests that children's early experiences with being personally disadvantaged may be *one type* of experience from which children construct their conceptions of fairness.

Importantly, however, future research should also be cautious in attempting to distill the experiences that drive children's social and moral development into specified

criterion. As shown in the present study, the developmental patterns regarding children's conceptualization of inequalities are complex, and individual differences (e.g., differences in ToM competencies, controlling for age) account for some, but by no means all, of this variation. The same is likely true for children's specific experiences with, for example, disadvantaged status. More likely is the idea that children's social and moral development is driven by a range of experiences, moderated by children's immediate perceptions of those experiences, and influenced by the full range of children's past experiences and perceptions of those experiences. Thus, although researchers should continue to push beyond describing development *with age*, it is also important to be cautious when investigating specific mediating variables and to be mindful of the complexities in children's developmental milieu.

Conclusion

The present study provides several novel insights into children's developing understanding of fairness and their perceptions of, and responses to, inequalities. Across a range of assessments, the present study documented how children's status within individual and gender based inequalities has a profound influence on how they perceive the inequality context; disadvantaged children demonstrated an overarching concern for rectifying the inequality, whereas advantaged children focused on equality. Children's perceptions of the context were also related to the type of inequality that they experienced; children evaluated gender based inequalities to be more wrong, and attempted to rectify them to a greater degree, compared to individually based inequalities. Results also highlighted age-related changes in children's ability to incorporate the type of inequality into their perceptions and responses.

The present study also provides important evidence regarding the developmental mechanisms implicated in children's developing conceptions of fairness. Children's experiences in the various inequality contexts was related to their inclusion decisions, allocations in third-person inequality contexts, and their ToM abilities in contexts following the initial inequality. Cumulatively, these results indicate how children's lived experiences can impact how they perceive, and in turn respond to, intergroup contexts such as decisions regarding whom to include into one's group and how resources ought to be distributed amongst their peers. Finally, the present study contributes to a growing body of literature documenting the various ways in which children's ToM acts as a developmental mechanism for children's developing conceptions of fairness, to the end of reducing intergroup biases and instances of discrimination. It is anticipated that the findings from this project will provide a basis for curriculum innovations as well as intervention studies designed to reduce prejudice and bias in childhood, and to increase equal and fair treatment of others.

Appendices

Appendix A:

IRB Approval Letter to conduct the study.

Appendix B:

IRB-approved Parental Consent form.

Appendix C:

An example of the protocol presented to children (*Group-Advantaged* condition shown to female participants).

Appendix A: IRB Approval Letter to conduct the study.

UNIVERSITY OF MARYLAND
INSTITUTIONAL REVIEW BOARD

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College Park, MD 20742-5125
TEL 301.405.4212
FAX 301.314.1475
irb@umd.edu
www.umresearch.umd.edu/IRB

DATE:	October 17, 2016
TO:	Melanie Killen
FROM:	University of Maryland College Park (UMCP) IRB
PROJECT TITLE:	[965920-1] Children's Perceptions of Individual and Structural Inequalities
REFERENCE #:	
SUBMISSION TYPE:	New Project
ACTION:	APPROVED
APPROVAL DATE:	October 17, 2016
EXPIRATION DATE:	October 16, 2017
REVIEW TYPE:	Expedited Review
REVIEW CATEGORY:	Expedited review category # 7

Thank you for your submission of New Project materials for this project. The University of Maryland College Park (UMCP) IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a project design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

Prior to submission to the IRB Office, this project received scientific review from the departmental IRB Liaison.

This submission has received Expedited Review based on the applicable federal regulations.

This project has been determined to be a Minimal Risk project. Based on the risks, this project requires continuing review by this committee on an annual basis. Please use the appropriate forms for this procedure. Your documentation for continuing review must be received with sufficient time for review and continued approval before the expiration date of October 16, 2017.

Please remember that informed consent is a process beginning with a description of the project and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the project via a dialogue between the researcher and research participant. Unless a consent waiver or alteration has been approved, Federal regulations require that each participant receives a copy of the consent document.

Please note that any revision to previously approved materials must be approved by this committee prior to initiation. Please use the appropriate revision forms for this procedure.

All UNANTICIPATED PROBLEMS involving risks to subjects or others (UPIRSOs) and SERIOUS and UNEXPECTED adverse events must be reported promptly to this office. Please use the appropriate reporting forms for this procedure. All FDA and sponsor reporting requirements should also be followed.

All NON-COMPLIANCE issues or COMPLAINTS regarding this project must be reported promptly to this office.

Please note that all research records must be retained for a minimum of seven years after the completion of the project.

If you have any questions, please contact the IRB Office at 301-405-4212 or irb@umd.edu. Please include your project title and reference number in all correspondence with this committee.

This letter has been electronically signed in accordance with all applicable regulations, and a copy is retained within University of Maryland College Park (UMCP) IRB's records.

Appendix B: IRB-approved Parental Consent form.

University of Maryland College Park

Initials: ____ *Date:* _____

UNIVERSITY OF MARYLAND

Department of Human Development and Quantitative Methodology
3304 Benjamin Building
College Park, MD 20742-1131

Melanie Killen, Ph.D.
Office: 301.405.3176
Email: mkillen@umd.edu

Dear Parents or Guardians:

We are conducting a study on how 3- to 10-year-old children make decisions about how to distribute resources fairly. We would like to tell you about our project, and ask for your permission to interview your son or daughter for this new project. This is a new project in which we will investigate children's understanding about fairness.

We will be telling children short stories using brightly illustrated pictures and asking them about what they think should happen in the stories. There are no right or wrong answers. We are learning about children's decisions, their interpretations of common occurrences (such as on the playground or in classrooms), and their reasons for their perspective. For example, we will tell them that they have been chosen to join a puzzle club that completes puzzles and gets virtual prizes. They will then have the opportunity to play two "Find the difference" puzzles with a (hypothetical) group member. Children will then be told about other groups who did better, worse, or the same as their group did on the puzzles, and will be given either more or fewer prizes. We will then ask children what they think about how the prizes were given out, how they would like to allocate the prizes, and what they think about alternative allocations of prizes. We will also vary the gender of the characters in the story to see how gender-group membership might also influence children's allocations of prizes. This study is not clinical or diagnostic, and data are reported in aggregate, examining age-related changes in allocations and judgments.

Trained research assistants from the University of Maryland will conduct the interviews. The interview is a one-time administration and will take about 20 minutes to complete. All interviews will be audio recorded and participation is strictly voluntary. All information is confidential.

Children who have participated with us in the past have found this interview to be a fun experience. **Please look over the description on the reverse side of this letter. If you are willing to have your child participate in the project, please fill out the information and return the form to the director.**

The information from our past research and our work with children and schools has helped teachers, policy makers, counselors and school administrators design curriculum and interventions to promote mutual respect among children and positive social environments for all children. This current research project has been approved by the Institutional Review Board at the University of Maryland. We thank you, in advance, for reading this letter, and for your willingness to allow your daughter/son to participate.

Sincerely,

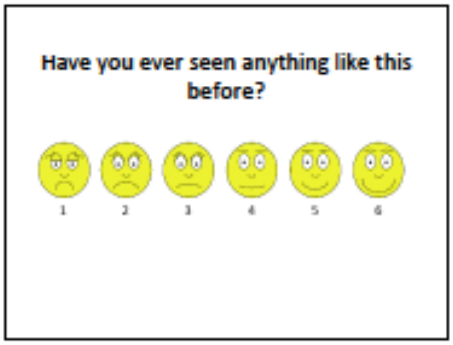
Melanie Killen, Ph.D.
Professor of Human Development and Quantitative Methodology
Associate Director, Center for Children, Relationships, and Culture

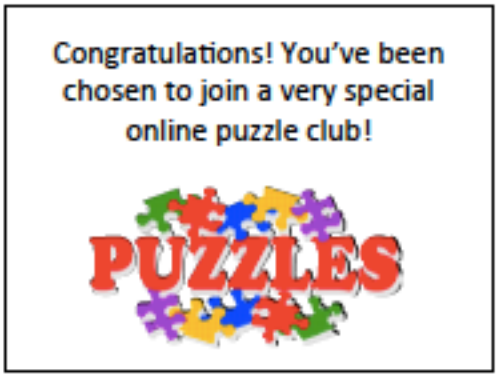
University of Maryland College Park

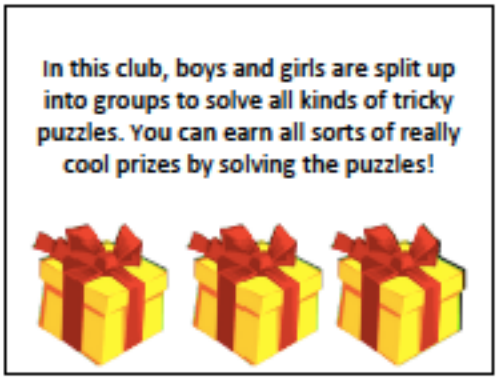
Initials: ____ *Date:* _____

Project Title	Children's Perspectives on Inequalities
Purpose of the Study	This research is being conducted by Dr. Melanie Killen at the University of Maryland, College Park. We are inviting your child to participate in this research project because he/she is between the ages of 3- to 10-years-old. We are conducting this project to investigate children's conceptions of fairness in a resource allocation context. We are particularly interested in children's conceptions of inequalities (when one child has more than another).
Procedures	Your child will be interviewed for 20 minutes in a quiet area designated by the school faculty. Trained research assistants from the University of Maryland, College Park, will give the interviews and will be available to answer any questions. Interviews will be audio recorded. Your child will be told stories using brightly illustrated pictures and asked what they think about different distributions of prizes (either getting more or fewer prizes than another group) based on either (a) how well their group did at a puzzle or (b) shared gender group membership with the child in charge of giving out the prizes. Your child will be asked whether they think about the allocation of prizes. There are no right or wrong answers.
Potential Risks & Discomforts	There are no reasonably foreseeable risks to individuals who participate in this study. All responses will be stored in locked cabinets and on secure, password protected, servers provided by the University of Maryland. In the unlikely event of a breach of confidentiality, there remains a minor risk that individuals' responses to the questions may be traceable through their participant ID numbers. Children who express discomfort have the option to end the study at any point.
Potential Benefits	This research is not designed to help your child personally, but to help us learn about children's use of justifications and reasoning to make decisions in peer contexts. This is a form of social knowledge, and will help us learn more about what think about social relationships and how this might change with age. We hope that in the future, teachers, parents and childcare workers will be able to learn from this research and use it to help improve children's social experiences.
Confidentiality	We will do our best to keep your child's personal information private. Your child's name will not be attached to the interview. Your child will be given an ID number. We will not share your child's answers with anyone, including teachers, principal, or parents. If we write a report or article about this research project, your child's identity will be protected as much as possible. All responses will be stored in locked cabinets and on secure, password protected, servers provided by the University of Maryland. Audio recordings will be stored destroyed after 5 years. Your child's information may be shared with representatives of the University of Maryland, College Park or governmental authorities if your child or someone else is in danger or if we are required to do so by law.
Right to Withdraw & Questions	Your child's participation is completely voluntary. Your child can ask any questions at any time. Your child may decide to stop participating at any time and will not be penalized or lose any benefits. Participation is not a school or class requirement, and you/your child's decision to participate in the study will not effect their standing at their school/program. If you decide to stop taking part in the study, if you have questions, concerns, or complaints, or if you need to report an injury related to the research, please contact the investigator, **Dr. Melanie Killen**, a professor in the Department of Human Development at the University of Maryland, College Park. If you have any questions about the research study itself, please contact Dr. Killen at: **Department of Human Development & Quantitative Methodology** **3304 Benjamin Building, College Park, MD 20742-1131** **(telephone) 301-405-3176 (email)** mkillen@umd.edu
Participant Rights	If you have questions about your rights as a research participant or wish to report a research-related injury, contact: University of Maryland College Park Institutional Review Board Office 1204 Marie Mount College Park, Maryland, 20742. E-mail: **irb@umd.edu;** Telephone: **301-405-0678**. This research has been reviewed according to the University of Maryland, College Park IRB procedures for research involving human subjects.
Statement of Consent	Your signature indicates that you are at least 18 years of age; you have read this consent form or have had it read to you; your questions have been answered to your satisfaction and you voluntarily agree to allow your child to participate in this research study. You will receive a copy of this signed consent form. If you agree to allow your child to participate, please sign your name below.
	CHILD'S NAME [Please Print]:
	CHILD'S BIRTHDATE:
Signature & Date	**PARENT'S NAME** [Please Print]:
	PARENT'S SIGNATURE:
	DATE:
	OPTIONAL: I consent to having my child's interview video recorded, and consent for this video to be used for educational and training purposes and presented at academic conferences (please check to the right). ☐

Appendix C: Example Protocol (*Group-Advantaged; female participants*)







Look, this is you! We'll use this as your character for all of the puzzles.

You

This is Tammy. She is the other girl in your group!

You

Tammy

And here are Steven and Collin. They're in the other group, the boys' group. All of you are going to do the exact same puzzles

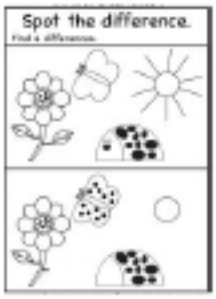
You Tammy

Steven Collin

Okay, now it's time to solve some puzzles and earn some prizes!

Remember to try your best so you can get as many prizes as possible!

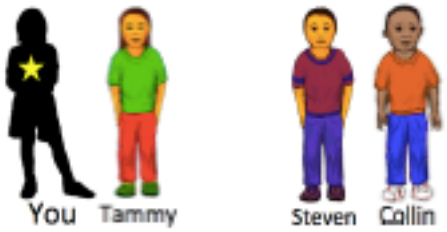
Puzzle Instructions: Practice

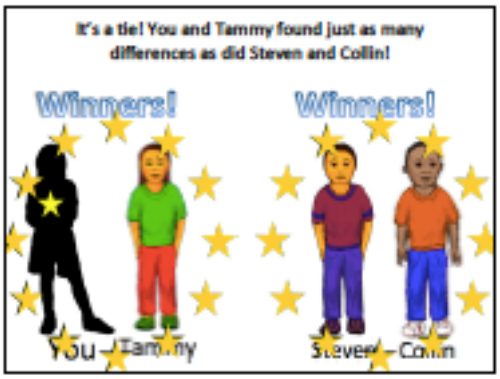


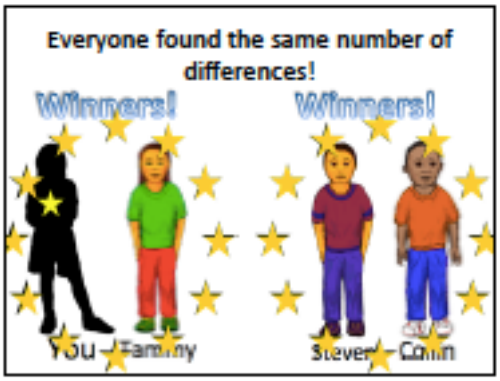
Puzzle 1:

Great job!

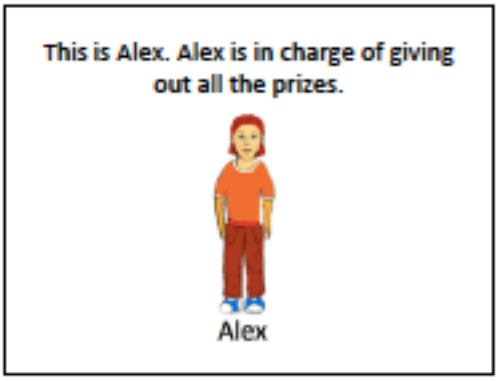
Remember, everyone did the same puzzle, so now let's see how everyone did.

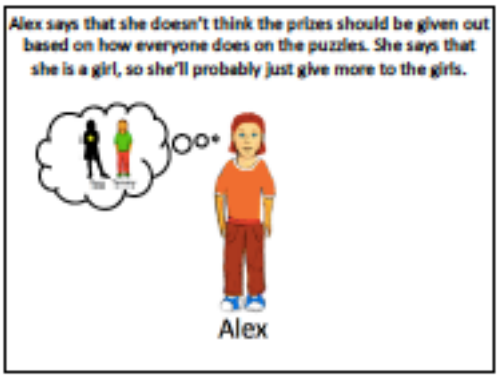



It's a tie! You and Tammy found just as many differences as did Steven and Collin!
Winners!
Winners!
You
Tammy
Steven
Collin

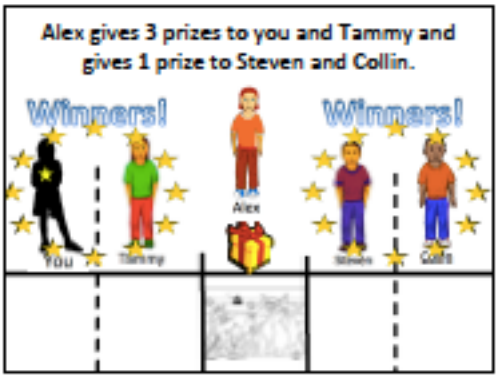

Everyone found the same number of differences!
Winners!
Winners!
You
Tammy
Steven
Collin

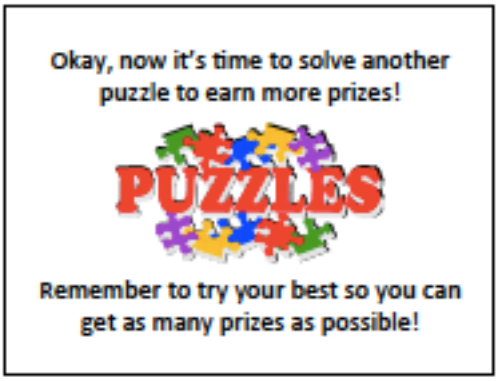

Okay, now it's time for everyone to get their prizes!
Winners!
Winners!
You
Tammy
Steven
Collin

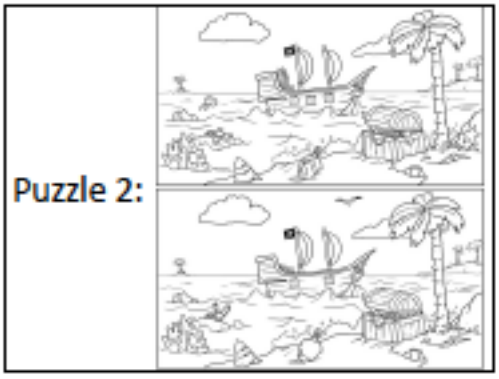

This is Alex. Alex is in charge of giving out all the prizes.
Alex


Alex says that she doesn't think the prizes should be given out based on how everyone does on the puzzles. She says that she is a girl, so she'll probably just give more to the girls.
Alex

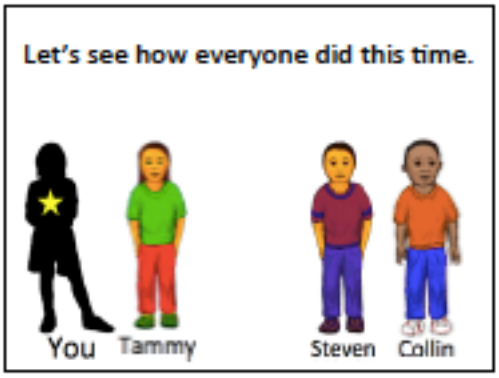

Now, let's see how Alex gives out the prizes to your group and the boys' group.
Winners!
Winners!
You
Alex


Alex gives 3 prizes to you and Tammy and gives 1 prize to Steven and Collin.
Winners!
Winners!
You
Alex

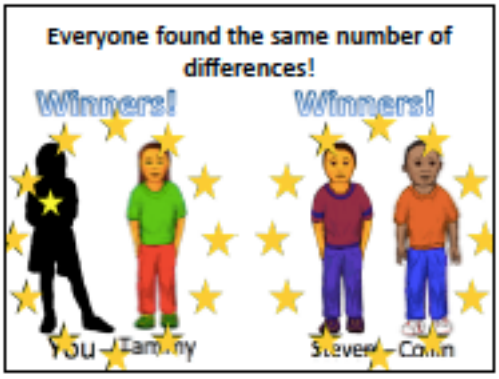

Okay, now it's time to solve another puzzle to earn more prizes!
PUZZLES
Remember to try your best so you can get as many prizes as possible!


Puzzle 2:

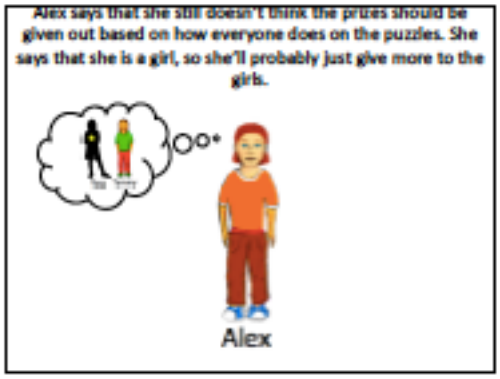

Great job!


Let's see how everyone did this time.
You
Tammy
Steven
Collin

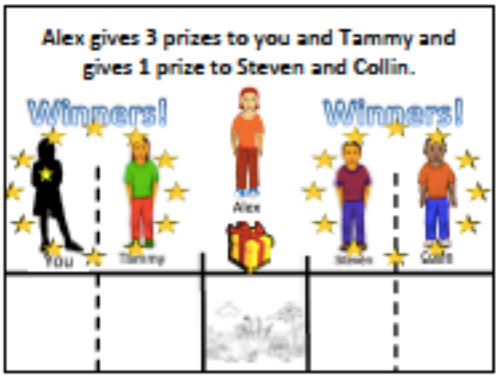

It's a tie again! You and Tammy found just as many differences as did Steven and Collin!
Winners!
Winners!
You
Tammy
Steven
Collin

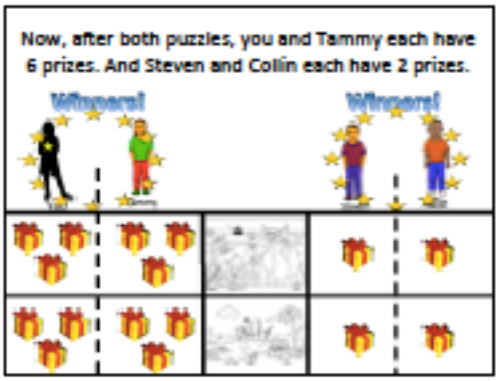

Everyone found the same number of differences!
Winners!
Winners!

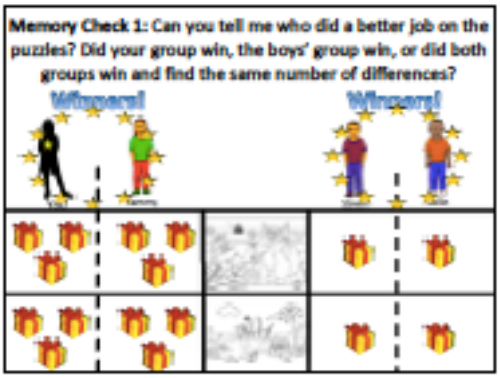

Okay, now it's time for everyone to get their prizes!
Winners!
Winners!

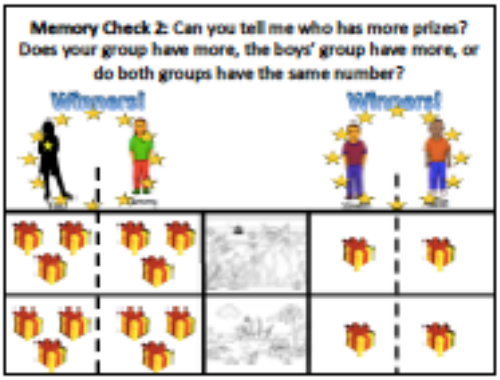

Alex says that she still doesn't think the prizes should be given out based on how everyone does on the puzzles. She says that she is a girl, so she'll probably just give more to the girls.
Alex

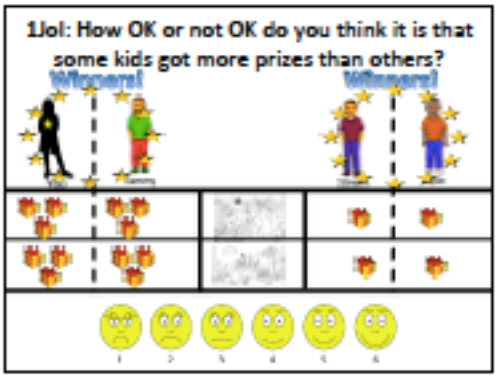

Now, let's see how Alex gives out the prizes to your group and the boys' group.
Winners!
Winners!
Alex

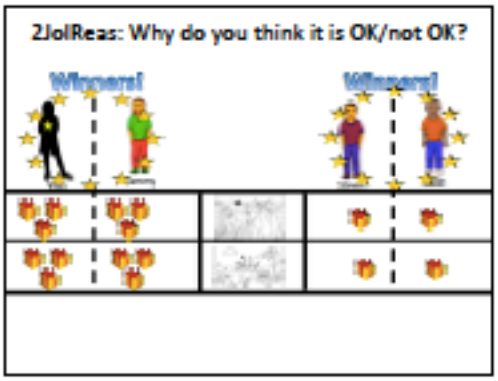

Alex gives 3 prizes to you and Tammy and gives 1 prize to Steven and Collin.
Winners!
Winners!
You
Tammy
Alex
Steven
Collin


Now, after both puzzles, you and Tammy each have 6 prizes. And Steven and Collin each have 2 prizes.
Winners!
Winners!

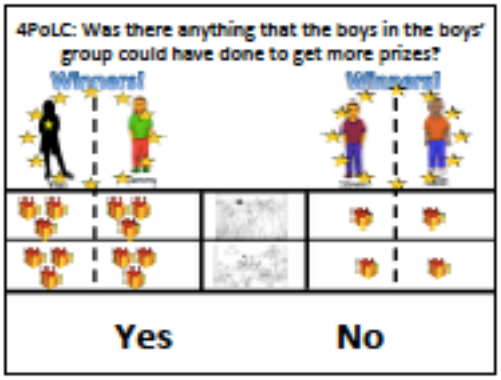

Memory Check 1: Can you tell me who did a better job on the puzzles? Did your group win, the boys' group win, or did both groups win and find the same number of differences?
Winners!
Winners!

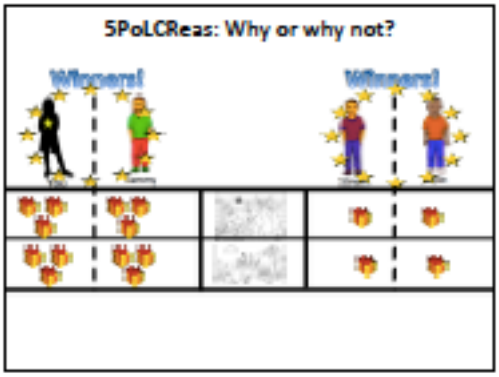

Memory Check 2: Can you tell me who has more prizes? Does your group have more, the boys' group have more, or do both groups have the same number?
Winners!
Winners!

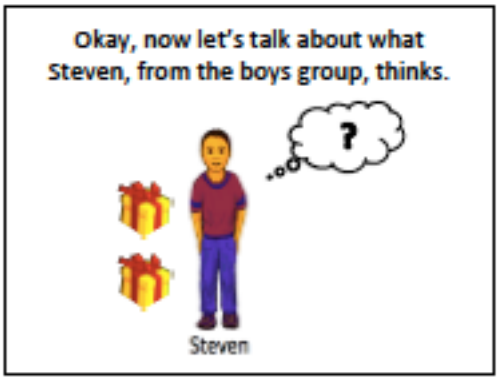

1Jol: How OK or not OK do you think it is that some kids got more prizes than others?
Winners!
Winners!

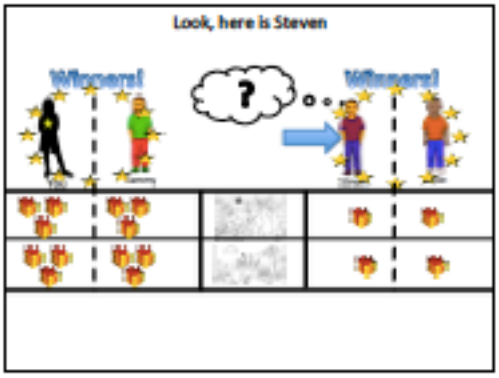

2JolReas: Why do you think it is OK/not OK?
Winners!
Winners!

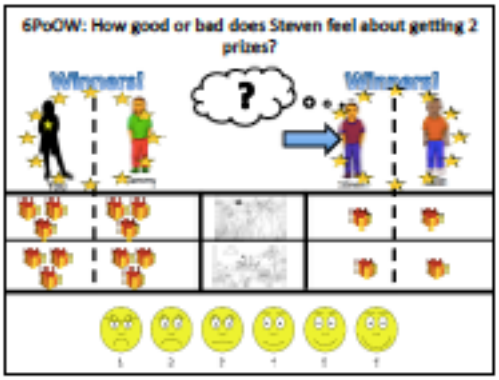

3EoOW: How good or bad do you feel about getting 6 prizes?
Winners!
Winners!

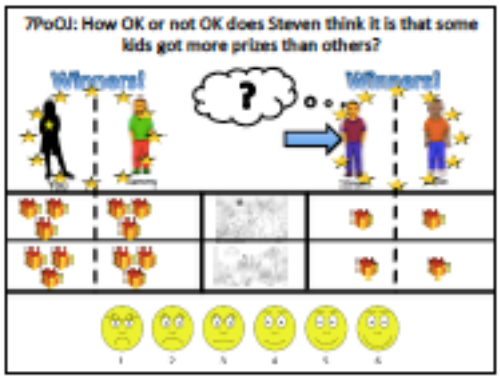

4PoLC: Was there anything that the boys in the boys' group could have done to get more prizes?
Winners!
Winners!
Yes
No

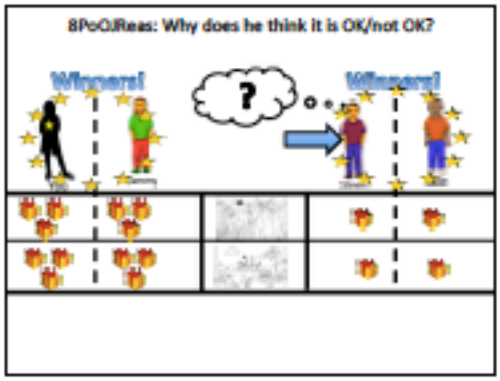

5PoLCReas: Why or why not?
Winners!
Winners!

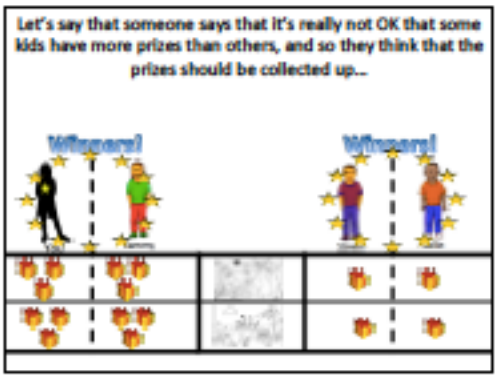

Okay, now let's talk about what Steven, from the boys group, thinks.
?
Steven

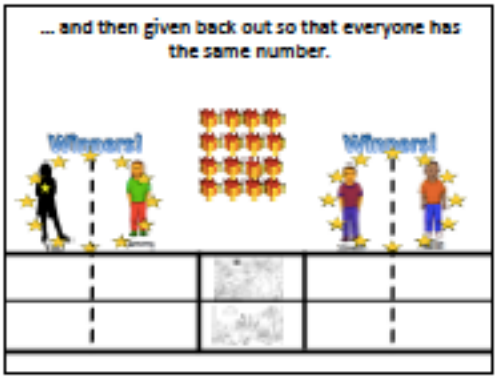

Look, here is Steven
Winners!
?
Winners!

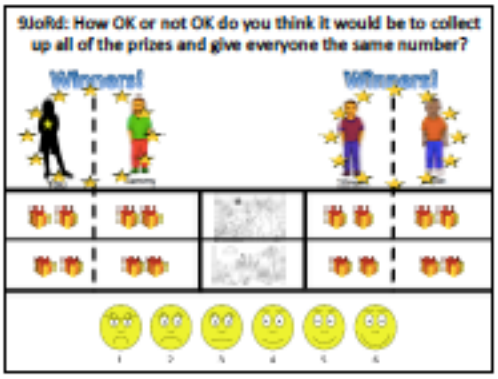

6PoOW: How good or bad does Steven feel about getting 2 prizes?
Winners!
?
Winners!

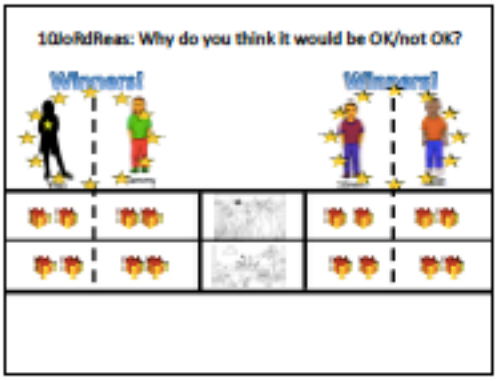

7PoOJ: How OK or not OK does Steven think it is that some kids got more prizes than others?
Winners!
?
Winners!

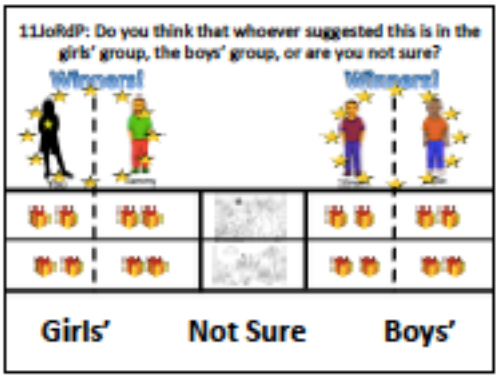

8PoOJReas: Why does he think it is OK/not OK?
Winners!
?
Winners!

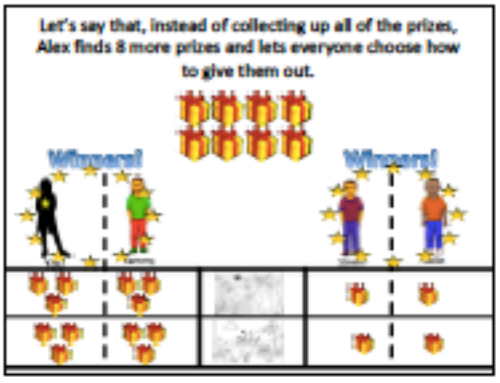

Let's say that someone says that it's really not OK that some kids have more prizes than others, and so they think that the prizes should be collected up...
Winners!
Winners!

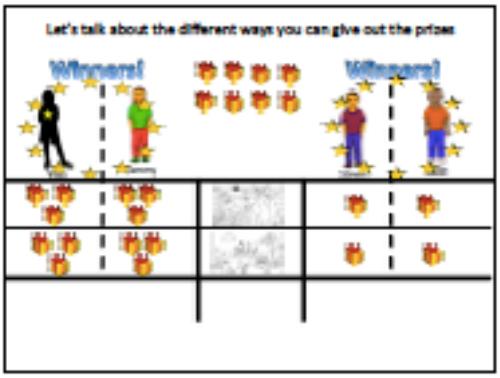

... and then given back out so that everyone has the same number.
Winners!
Winners!

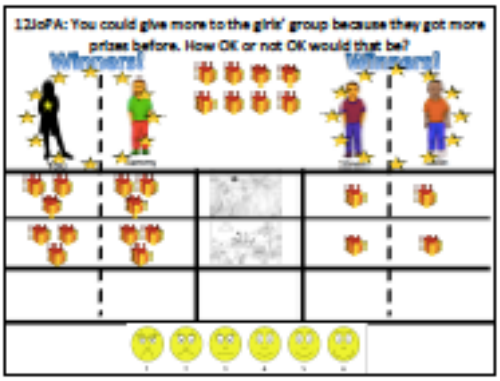

9JoRd: How OK or not OK do you think it would be to collect up all of the prizes and give everyone the same number?
Winners!
Winners!

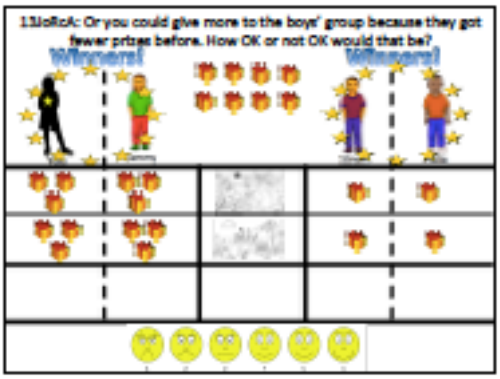

10JoRdReas: Why do you think it would be OK/not OK?
Winners!
Winners!

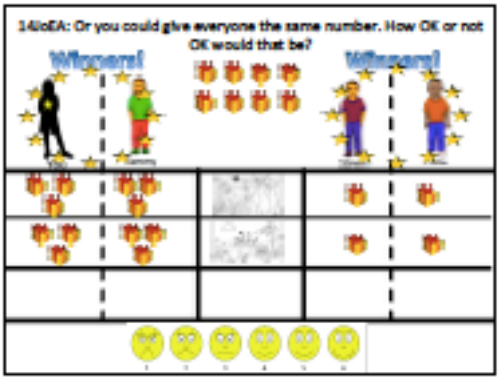

11JoRdP: Do you think that whoever suggested this is in the girls' group, the boys' group, or are you not sure?
Winners!
Winners!
Girls'
Not Sure
Boys'

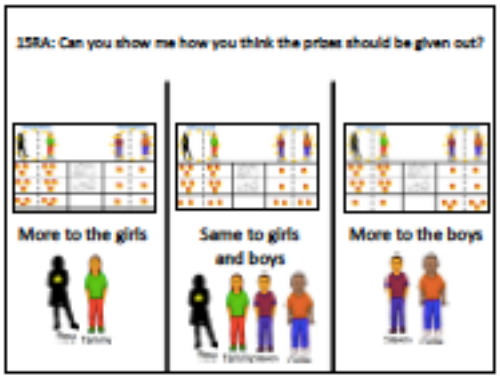

Let's say that, instead of collecting up all of the prizes, Alex finds 8 more prizes and lets everyone choose how to give them out.
Winners!
Winners!

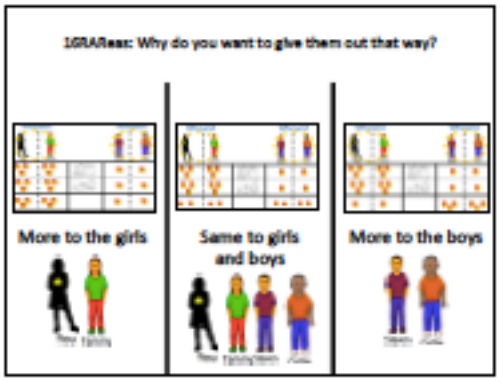

Let's talk about the different ways you can give out the prizes
Winners!
Winners!


12IoFA: You could give more to the girls' group because they got more prizes before. How OK or not OK would that be?
Winners!
Winners!

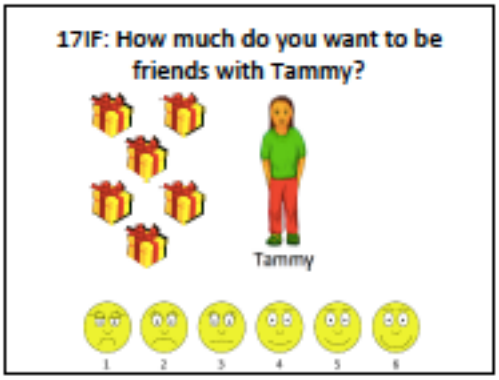

13IoRcA: Or you could give more to the boys' group because they got fewer prizes before. How OK or not OK would that be?
Winners!
Winners!

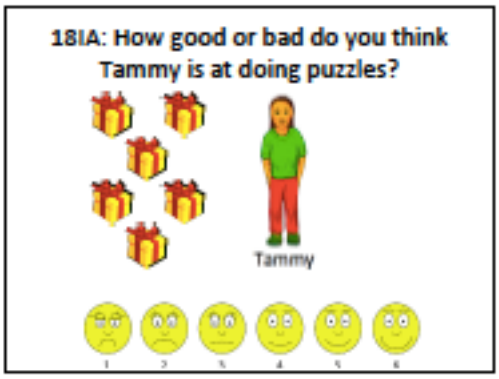

14IoEA: Or you could give everyone the same number. How OK or not OK would that be?
Winners!
Winners!


15RA: Can you show me how you think the prizes should be given out?
More to the girls
Same to girls and boys
More to the boys

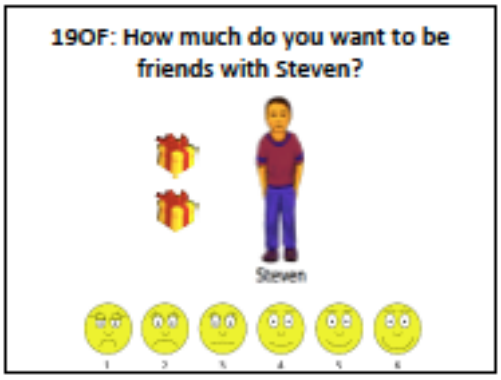

16RAReas: Why do you want to give them out that way?
More to the girls
Same to girls and boys
More to the boys

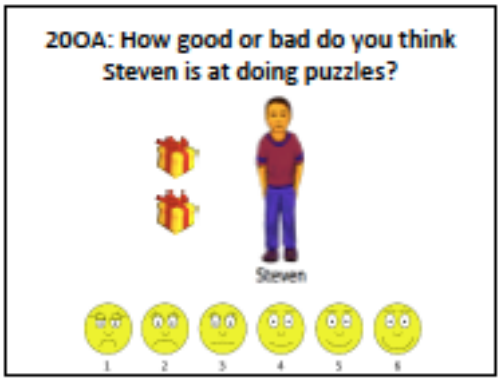

Okay, now let's talk about Tammy from your group.
Tammy


17IF: How much do you want to be friends with Tammy?
Tammy
1
2
3
4
5
6


18IA: How good or bad do you think Tammy is at doing puzzles?
Tammy
1
2
3
4
5
6


Okay, now let's talk about Steven from the boys' group.
Steven


19OF: How much do you want to be friends with Steven?
Steven
1
2
3
4
5
6


20OA: How good or bad do you think Steven is at doing puzzles?
Steven
1
2
3
4
5
6

21ID: If you were picking new partners for a puzzle competition, and you could only pick one partner, who would you pick?

Tammy

Steven

22IDReas: Why do you want to pick them?

Tammy

Steven

Awesome job!

Now let's hear a few more stories!

Here is a Crayon box. What do you think is inside the Crayon box?

1

Let's see, there's really crackers inside!

1

Memory Check 1: Do you remember what is in the Crayon box?

2

Look, here is Maddy, she is a girl just your age! Maddy has never seen inside this Crayon box before.

Maddy

2

Memory Check 2: Did Maddy see inside the box?

Maddy


23ToMCFB1: What does Maddy think is inside the box? Crackers or crayons?
Crayola
24
Maddy


Here is a Legos box, and here is Jackie.
CLASSIC
Jackie


What do you think is inside the Legos box?
CLASSIC
Jackie


Oh good, because I love Legos. Legos are so much fun to play with. I'm glad it isn't rocks, because I really don't like rocks. Rocks are not fun to play with at all.
CLASSIC
Jackie

Now Jackie is going to go outside for a minute.

Jackie

Let's see what's really inside the Legos box.

Oh, look, there are really rocks inside and no Legos! There's nothing but rocks!

Memory Check 1: Do you remember what Jackie's favorite toy is?

Jackie has never seen inside this box. Now, here comes Jackie, she's coming back and it's play time!

24ToMBE1: Let's give Jackie this box. So, how does Jackie feel right when we give her the box, before she can open it up? Happy or Sad?

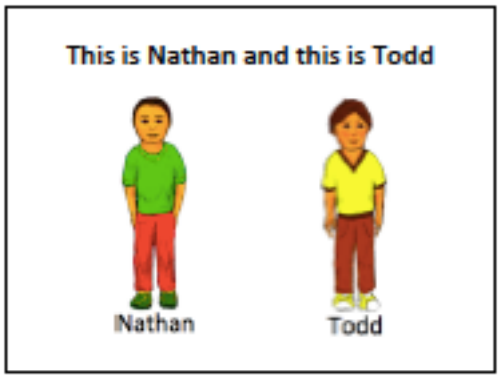
Sad | Happy

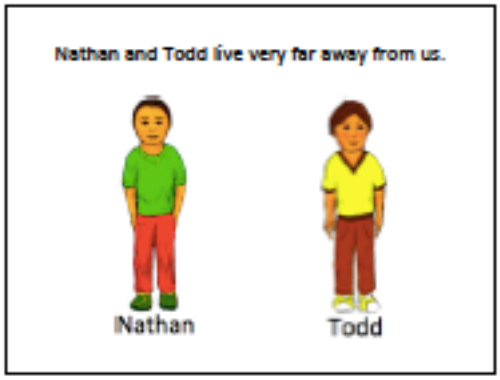
2SToMBE3: How does Jackie feel after she looks inside the box and sees the rocks? Happy or Sad?

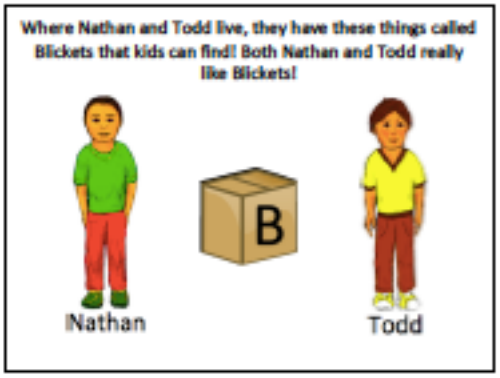
Sad | Happy

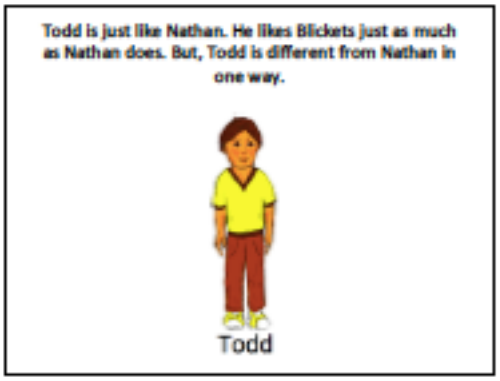
Awesome job!

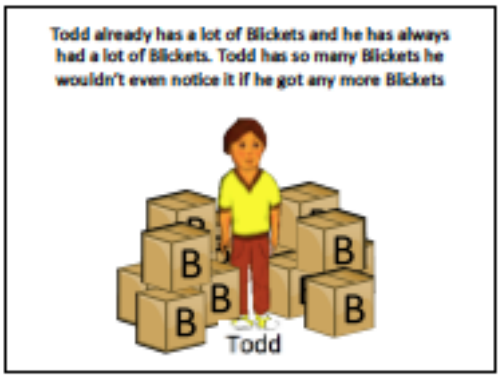
One last story!


This is Nathan and this is Todd
Nathan
Todd

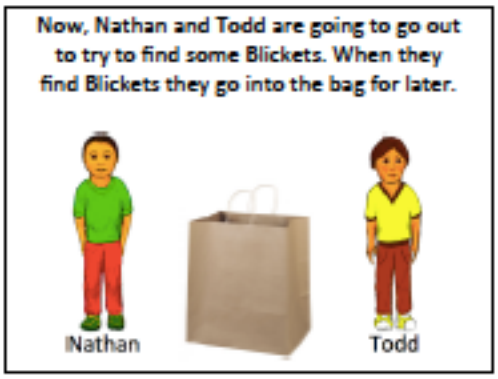

Nathan and Todd live very far away from us.
Nathan
Todd

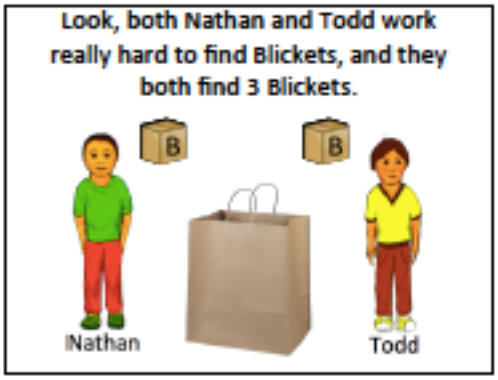

Where Nathan and Todd live, they have these things called Blickets that kids can find! Both Nathan and Todd really like Blickets!
B
Nathan
Todd

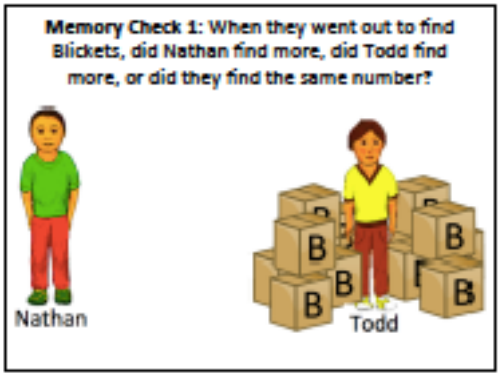

Todd is just like Nathan. He likes Blickets just as much as Nathan does. But, Todd is different from Nathan in one way.
Todd

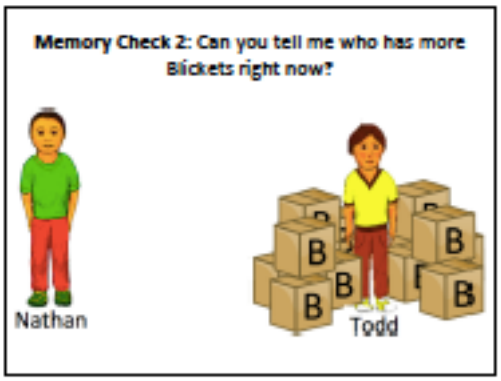

Todd already has a lot of Blickets and he has always had a lot of Blickets. Todd has so many Blickets he wouldn't even notice it if he got any more Blickets
B
B
B
B
B
Todd

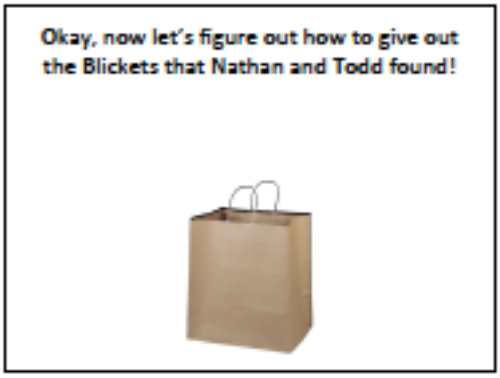

Nathan doesn't have any Blickets and he has never had very many Blickets. If Nathan doesn't get any Blickets, he'll have to find something else to play with.
Nathan

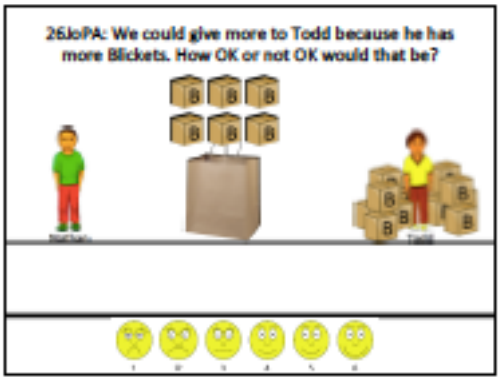

Now, Nathan and Todd are going to go out to try to find some Blickets. When they find Blickets they go into the bag for later.
Nathan
Todd

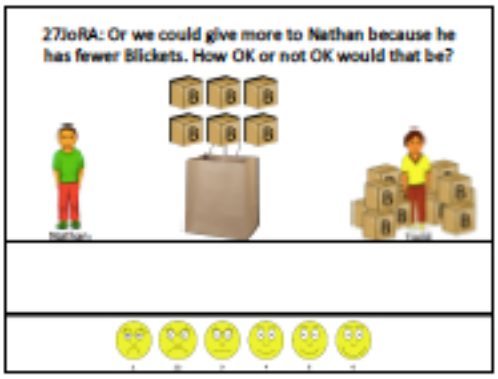

Look, both Nathan and Todd work really hard to find Blickets, and they both find 3 Blickets.
B
B
Nathan
Todd

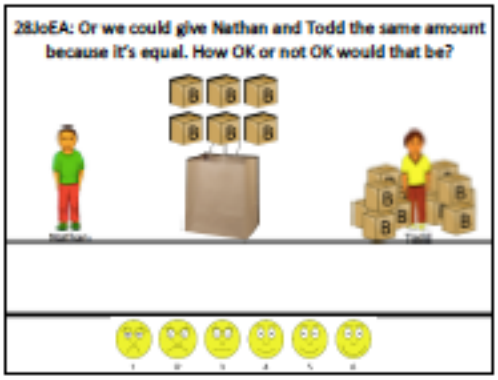

Memory Check 1: When they went out to find Blickets, did Nathan find more, did Todd find more, or did they find the same number?
Nathan
Todd

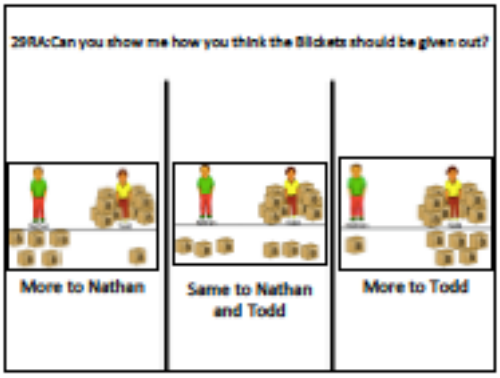

Memory Check 2: Can you tell me who has more Blickets right now?
Nathan
Todd

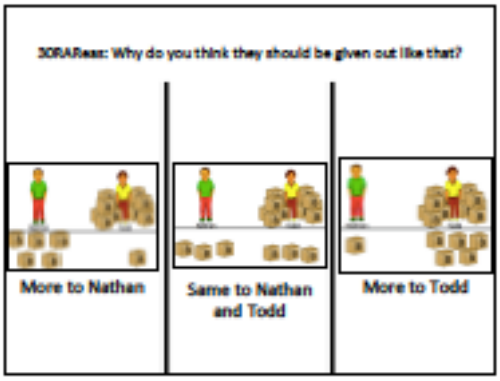

Okay, now let's figure out how to give out the Blickets that Nathan and Todd found!


26JoPA: We could give more to Todd because he has more Blickets. How OK or not OK would that be?


27JoRA: Or we could give more to Nathan because he has fewer Blickets. How OK or not OK would that be?


28JoEA: Or we could give Nathan and Todd the same amount because it's equal. How OK or not OK would that be?


29RAcCan you show me how you think the Blickets should be given out?
More to Nathan
Same to Nathan and Todd
More to Todd


30RARaas: Why do you think they should be given out like that?
More to Nathan
Same to Nathan and Todd
More to Todd

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